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the 1990s, the incidence of *S. flexneri* has increased in the United Kingdom [10]. In the United States, *S. flexneri* has been reported to be the most common serotype of *S. flexneri* isolated from children with acute bacterial dysentery [11].

There is a paucity of data on the epidemiology of *S. flexneri* in the United Kingdom. In the 1970s, *S. flexneri* was the most commonly isolated serotype of *S. flexneri* from children with acute bacterial dysentery in the United Kingdom [12]. In the 1980s, *S. flexneri* was the most commonly isolated serotype of *S. flexneri* from children with acute bacterial dysentery in the United Kingdom [13].

In the 1990s, *S. flexneri* was the most commonly isolated serotype of *S. flexneri* from children with acute bacterial dysentery in the United Kingdom [14]. In the 2000s, *S. flexneri* was the most commonly isolated serotype of *S. flexneri* from children with acute bacterial dysentery in the United Kingdom [15].

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In the 2000s, *S. flexneri* was the most commonly isolated serotype of *S. flexneri* from children with acute bacterial dysentery in the United Kingdom [18]. In the 2000s, *S. flexneri* was the most commonly isolated serotype of *S. flexneri* from children with acute bacterial dysentery in the United Kingdom [19].

In the 2000s, *S. flexneri* was the most commonly isolated serotype of *S. flexneri* from children with acute bacterial dysentery in the United Kingdom [20]. In the 2000s, *S. flexneri* was the most commonly isolated serotype of *S. flexneri* from children with acute bacterial dysentery in the United Kingdom [21].

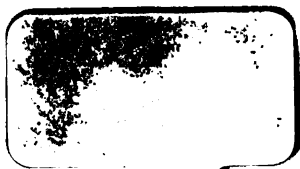
In the 2000s, *S. flexneri* was the most commonly isolated serotype of *S. flexneri* from children with acute bacterial dysentery in the United Kingdom [22]. In the 2000s, *S. flexneri* was the most commonly isolated serotype of *S. flexneri* from children with acute bacterial dysentery in the United Kingdom [23].

In the 2000s, *S. flexneri* was the most commonly isolated serotype of *S. flexneri* from children with acute bacterial dysentery in the United Kingdom [24]. In the 2000s, *S. flexneri* was the most commonly isolated serotype of *S. flexneri* from children with acute bacterial dysentery in the United Kingdom [25].

In the 2000s, *S. flexneri* was the most commonly isolated serotype of *S. flexneri* from children with acute bacterial dysentery in the United Kingdom [26]. In the 2000s, *S. flexneri* was the most commonly isolated serotype of *S. flexneri* from children with acute bacterial dysentery in the United Kingdom [27].



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SOUTH KENSINGTON MUSEUM  
**SCIENCE HANDBOOKS.**

*BETHNAL GREEN BRANCH MUSEUM.*

LIST OF  
THE CONTENTS OF THE COLLECTION  
OF  
**ECONOMIC ENTOMOLOGY.**

BY  
ANDREW MURRAY, F.L.S.



*Prepared at the request of the Lords of the Committee of Council on  
Education, and Published for them*

BY  
CHAPMAN AND HALL, 193, PICCADILLY.

1877.

18940





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*A Series of Handbooks to this Collection is in preparation. One Volume, APTERA, relating to CASES I. to XXI., has already been issued.*

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# ECONOMIC ENTOMOLOGY.

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## LIST OF THE CONTENTS OF THE CASES IN BETHNAL GREEN BRANCH MUSEUM.

(To DATE—DEC. 1876.)

NOTE.—*In this Collection all the species are British except when otherwise stated.*

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### CASE I.

#### CRUSTACEANS (likely to be mistaken for Insects).

- no.  
1. *Oniscus asellus*, specimens, injures roots of plants.  
2. „ „ enlarged figure.  
3. *Porcellio scaber*, specimens, injures roots.  
4. „ „ enlarged figure.  
5. *Armadillo vulgaris*, specimens, injures plants by eating and disturbing the roots.  
6. „ „ enlarged figure extended.  
7. „ „ enlarged figure rolled up.

### INSECTS.

#### MYRIAPODS—JULIDÆ.

8. *Glomeris limbata*, specimen, Europe, injures plants by disturbing and eating their roots.  
9. „ „ enlarged figure.  
10. *Sphæropœus* (*Zephronica*, *Gray*) *castaneus*, specimens, from the East Indian Archipelago.  
11. „ enlarged figure.  
12. „ *heterostictus*, specimen, among plants imported from the East Indies.  
13. „ „ enlarged figure.  
14. „ *glabratus*, specimen, East Indian Archipelago.  
15. Sketch of Orchid injured by such insects eating the roots.



- NO.  
 16. *Julus guttatus*, specimens in phial, injures roots.  
 17. " " enlarged figure of do.  
 18. Sketch of carrot injured by do.  
 19. Lily roots injured by do., preserved in glycerine ; specimens in phial.  
 20. Model of lily roots injured by do.  
 21. *Julus terrestris*, specimen, injures roots of plants.  
 22. " " enlarged figure of do.  
 23. Model of parsnip root injured by do.  
 24. *Julus londinensis*, specimen, injures roots.  
 25. " " enlarged figure of do.  
 26. " nitens, specimen, imported among plants from the East Indies.  
 27. " " enlarged figure of do.  
 28. *Spirostreptus javanicus* (?) specimen, Java (?)  
 29. " " figure of do.  
 30. " annulatus, specimens, Natal.  
 31. " " figure of do.  
 32. *Polydesmus complanatus*, specimens, injures roots of vegetables.  
 33. " " enlarged figure of do.  
 34. " dorsalis, *aff. thomsoni*, specimen, Old Calabar.  
 35. " " figure of do., natural size.  
 36. *Brachycybe rosea*, specimens, California.  
 37. " " enlarged figure of do.

## CASE II.

MYRIAPODS (*continued*).

## SCOLOPENDRIDÆ.

1. *Mecistocephalus punctifrons*, specimen, East Indies.
2. *Geophilus longicornis*, specimens.
3. " " enlarged figure of do.
4. " subterraneus, specimens in phial.
5. " " enlarged figure.
6. Illustrative vignette of phosphorescent light left on their traces by do.
7. *Scolopendra ceylonensis*, specimens, Ceylon, bite venomous.
8. " platypoides, specimens, Brazil "
9. " placeae, specimens, Brazil "
10. " variegata, specimens, Demerara "
11. " angusticollis, specimens, Old Calabar "
12. " leachii, specimen, Cape Verd Islands "
13. " tuberculidens, specimens, E. Indies "
14. " cœruleo-viridis, specimens, Australia, bite very venomous.
15. " enlarged figure of do.
16. *Cryptops hortensis*, specimen.

17. *Cryptops hortensis*, enlarged figure of do.  
 18. *Lithobius forficatus*, specimens.  
 19. „ „ enlarged figure.  
 20. *Cermatia capensis*, specimen, Cape of Good Hope.  
 21. „ „ enlarged figure of do.  
 22. „ *smithii* specimen, New Holland.  
 23. „ „ enlarged figure of do.

## CASE III.

## SCORPIONS AND THEIR ALLIES.

1. *Chelifer musæorum*, specimens, allied to scorpions, but stingless.
2. „ „ enlarged figure of do.
3. „ *geoffroyi*, specimens, „ „
4. „ „ enlarged figure of do.
5. Scorpion (species of *Androctonus*), specimens of do., newly born, from Rangoon.
6. „ enlarged figure of do.
7. *Androctonus priamus* (?), specimens, Java (?).
8. „ *Sp.*, specimen, East Indies.
9. *Buthus*, *Sp.*, specimens, Cape.
10. „ *cæsar*, specimens, E. Indies.
11. „ *afer*, specimen, Africa and East Indies.
12. „ *imperator*, figure natural size, largest scorpion described.
13. *Phrynus ceylonicus*, specimen, Ceylon, harmless.
14. „ „ figure of do., natural size.
15. *Telyphonus giganteus*, specimen, East Indies, allied to scorpions, but harmless.
16. „ „ figure of do., natural size.
17. „ *proscorpio*, specimens, Java.
18. „ „ figure of do., natural size.
19. *Galeodes araneoides*, specimen (o), Egypt, bite said to be venomous, very troublesome to camels.
20. „ „ figure of do., natural size
21. Illustrative vignette, camel.

## CASE IV.

## SPIDERS.

1. *Mygale avicularia*, the bird-catching spider of South America, sketch of, natural size, Tropical S. America.
2. „ *californica*, California, sketch of, natural size.

- no.  
 3. *Mygale californica*, specimens of do.  
 4. „ *fasciata*, the banded *Mygale*, from the E. Indies, Ceylon, sketch of, natural size.  
 5. „ *klugii*, specimen of insect from Eastern Andes, said to be very venomous.  
 6. „ „ sketch of do. from Brazil, natural size.  
 7. „ *versicolor*, specimen of insect, Brazil.  
 8. „ „ sketch of do., natural size.  
 9. „ *erichsoni*, specimen of insect, St. Domingo.  
 10. „ „ sketch of do., natural size  
 11. „ *convexa*, specimen of insect, West Africa.  
 12. *Atypus sulzeri*, sketch of insect, the only British representative of the *Mygalidæ*.  
 13. *Cteniza ionica*, trap-door spider from South of Europe, nest of.  
 14. „ „ sketch of insect.  
 15. *Actinopus nidulans*, nest of, from Jamaica, with specimens in the nest (2 broken).  
 16. „ „ sketch of insect enlarged.  
 17. „ „ specimens of do., male and female.  
 18. *Nemesia eleanora*, diagram to show the double-branched nest of, with an outer and inner trap-door, South Europe.

## CASE V.

## TRAP-DOOR NESTS OF SPIDERS.

From South of France. Presented by LADY JARDINE.

1. *Nemesia cæmentaria*, cork trap-door nest made by do., door indicated by a straw in it, South of Europe.
2. „ „ key to do., door coloured.
3. „ „ specimen of maker of cork trap-door nests (male).
4. „ „ cork trap-door nest made by do., door indicated by a straw.
5. „ „ key to do., door coloured.
6. „ „ cork trap-door nest, straw in door.
7. „ „ key to do., door coloured.
8. „ „ specimen of female insect, maker of cork trap-door nest.
9. „ „ cork trap-door nest, straw in door.
10. „ „ key to do., door coloured.
11. „ *eleanora*, wafer trap-door nest with two doors, and an old inner tube door in lower right-hand corner, South of Europe.
12. „ „ key to do., outer doors coloured brown, old inner tube door bluish.

- |     |                   |                                                                                                                                                                                    |
|-----|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| no. |                   |                                                                                                                                                                                    |
| 13. | Nemesia eleanora, | diagram showing a section of two doors of nest.                                                                                                                                    |
| 14. | „ „               | wafer trap-door nest with two entrances, part of old inner tube door in lower left-hand corner.                                                                                    |
| 15. | „ „               | key to do., outer doors coloured brown, old inner tube door bluish.                                                                                                                |
| 16. | „ „               | wafer trap-door nest with two entrances, a straw in each door.                                                                                                                     |
| 17. | „ „               | key to do., doors coloured.                                                                                                                                                        |
| 18. | „ „               | specimen of male insect, maker of wafer trap-door nests.                                                                                                                           |
| 19. | „ „               | wafer trap-door nest with two entrances, an old door of the inner second tube shown in upper corner to the left, a part of tube in upper right-hand corner.                        |
| 20. | „ „               | key to do., the outer doors coloured brown; an inner door removed from second tube coloured white and blue; part of the tube shown in right-hand upper corner coloured pale brown. |
| 21. | „ „               | wafer trap-door nest with two entrances, a straw in each door.                                                                                                                     |
| 22. | „ „               | key to do., doors coloured.                                                                                                                                                        |
| 23. | „ „               | specimen of female insect, maker of wafer trap-door nests; from Cannes.                                                                                                            |
| 24. | „ „               | wafer trap-door nest, injured and artificially repaired.                                                                                                                           |
| 25. | „ „               | key to do., door coloured.                                                                                                                                                         |
| 26. | Cteniza fodiens,  | magnified sketch of, one of the makers of cork trap-door nests, South of Europe.                                                                                                   |
| 27. | „ „               | magnified sketch of a cork trap-door.                                                                                                                                              |
| 28. | Nemesia eleanora, | magnified sketch of insect, maker of the wafer trap-door nests, South of Europe.                                                                                                   |
| 29. | „ „               | magnified sketch of wafer trap-door.                                                                                                                                               |

## CASE VI.

### SPIDERS (*continued*).

1. *Mygale detrita*, sketch of insect, Brazil.
2. „ „ specimen of do., found in London docks.
3. *Latrodectes malmignatus*, sketch of do., Catalonia, bite very venomous.
4. *Lycosa tarantula*, sketch of do., from South of Europe, bite venomous.

## GENERA OF BRITISH SPIDERS.

### Family DYSDERIDÆ.

5. *Oonops pulcher*, sketch of do.
6. *Dysdera crocata* (*rubicunda*, *Bl.*), specimen of do.

NO

7. *Dysdera crocata*, sketch of do.
8. *Harpactes hombergii* (*Dysdera hombergii*, *Bl.*), sketch of do.
9. *Segestria senoculata*, sketch of do.

## Family DRASSIDÆ.

10. *Micaria pulicaria* (*Drassus micans*, *Bl.*), sketch of do.
11. *Drassus blackwallii* (*sericeus*, *Bl.*), sketch of do.
12. *Clubiona pallidula* (*epimelus*, *Bl.*), sketch of do.
13. *Chiracanthum nutrix* (*non*, *Bl.*), sketch of do.
14. *Hecaërge maculata*, sketch of do.

## Family DICTYNIDÆ.

15. *Eresus cinnabarinus*, sketch of do.
16. *Dictyna arundinacea* (*Ergatis benigna*, *Bl.*), sketch of do.
17. " " sketch of cocoons of do.

## Family AGELENIDÆ.

18. *Argyroneta aquatica*, sketch of do.
19. *Amaurobius ferox* (*Ciniflo ferox*, *Bl.*), sketch of do.
20. " (*Ciniflo*) *mordax*, sketch of do.
21. *Agelena labyrinthica*, sketch of do.
22. *Tegenaria guyonii* (*Tegenaria domestica*, *Bl.*), sketch of do.

## Family SCYTODIDÆ.

23. *Scytodes thoracica*, sketch of do.

## CASE VII.

GENERA OF BRITISH SPIDERS (*continued*).

## Family PHOLCIDÆ.

1. *Pholcus phalangoides*, sketch of insect.

## Family THERIDIIDÆ.

2. *Theridion tepidariorum*, sketch of do.
3. " *riparium*, sketch of tent and cocoons of do.

## Family LINYPHIADÆ.

4. *Linyphia montana* (*marginata*, *Bl.*), sketch of insect
5. *Walckenaëria pratensis*, sketch of do.
6. " " sketch of do.

Family EPEIRIDÆ.

no.

7. *Eperia quadrata*, sketch of do.
8. „ *arbustorum*, *Koch* (bicornis, *Bl.*)
9. „ *diademata* (*diadema*, *Bl.*), sketch of do.

Family ULOBORIDÆ.

10. *Uloborus walckenaërus* (*Veleda lineata*, *Bl.*), sketch of do.

Family THOMISIDÆ.

11. *Xysticus pini* (*Thomisus audax*, *Bl.*), sketch of do.
12. *Thomisus onustus* (*abbreviatus*, *Bl.*), sketch of do.
13. *Diæa dorsata* (*Thomisus floricolens*, *Bl.*), sketch of do.
14. *Philodromus margaritatus* (*pallidus*, *Bl.*), sketch of do.
15. *Micrommata virescens* (*Sparassus smaragdulus*, *Bl.*), sketch of do., male.
16. „ „ sketch of do., female.

Family LYCOSIDÆ.

17. *Dolomedes fimbriatus*, sketch of insect.
18. *Trochosa cinerea* (*Lycosa allodroma*, *Bl.*), sketch of do.

Family SPHASIDÆ.

19. *Oxyopes lineatus* (*Sphasus lineatus*, *Bl.*), sketch of do.

Family SALTICIDÆ.

20. *Epiblemum scenicum* (*Salticus scenicus*, *Bl.*), sketch of do.
21. *Heliophanes cupreus* (*Salticus cupreus*, *Bl.*), sketch of do.
22. *Ballus depressus* (*Salticus obscurus*, *Bl.*), sketch of do.
23. *Salticus formicarius*, sketch of do.

CASE VIII.

MITES.

TROMBIDIINÆ. TETRANYCHIDÆ (Spinning Mites).

1. *Tetranychus telarius*, Britain, red spider, magnified sketch of larva, injurious to plants, especially in greenhouses.
2. „ „ sketch of male.
3. „ „ sketch of female.
4. „ *lutearius*, magnified sketch, spins a fine web on gorse.
5. „ *sp.*, on oak, magnified sketch.
6. „ *fici*, France, sketch of leaf attacked, perhaps introduced.

- NO.  
 7. *Tetranychus fici*, magnified sketch of insect.  
 8. „ „ *tiliarum*, leaf of lime attacked by do.  
 9. „ „ „ magnified sketch of insect.  
 10. „ „ *socius*, magnified sketch of do.  
 11. „ „ *erioslemi*, leaves of *Eriostemon neriifolium* attacked by do.,  
     in greenhouses in Britain.  
 12. „ „ „ magnified sketch of leaf showing the mischief.  
 13. „ „ „ twig showing mischief on do.  
 14. „ „ „ magnified sketch of do.  
 15. „ „ „ magnified sketch of insect.  
 16. „ „ *autumnalis*, the harvest bug, magnified figure of young stage,  
     very troublesome in autumn in Britain and the  
     Continent.  
 17. „ „ „ magnified figure of perfect insect, under side.  
 18. „ „ *trombidinus*, enlarged figure of insect, France.  
 19. „ „ *ruberrimus* „ „ Europe.  
 20. *Megamerus celer* „ „ France.  
 21. *Tetranychus* (?) *americanus* „ „ one of the harvest mites or jiggers  
     of N. America.  
 22. *Tetranychus* (?) *irritans* „ „ „  
     described as very annoying.  
 23. *Petrobia lapidum*, enlarged figure of young.  
 24. „ „ „ enlarged figure of perfect insect.  
 25. *Eupodes celer*, enlarged figure of young, Europe.  
 26. „ „ „ enlarged figure of perfect insect.

CASE VIII<sup>2</sup>.MITES (*continued*).TETRANYCHIDÆ (Spinning Mites) (*continued*).

1. Specimens of web of *Tetranychus lintearius* on furze bush, from Wey-  
 bridge. The red dust on the web consists of the dead mites.

## CASE IX.

MITES (*continued*).

## TROMBIDIIDÆ (Harvest Mites).

1. *Linopodes longipes*, magnified sketch of insect, Europe.  
 2. „ „ *ravus* „ „ „  
 3. „ „ *cursorius* „ „ „  
 4. *Rhyncholophus cinereus* „ „ France.  
 5. „ „ *phalangoides* „ „ Europe.

6. *Rhyncholophus major*, magnified sketch of insect, France.
7. *Smaridia papillosa* " "
8. *Pachygnathus velatus* " "
9. *Trombidium parasiticum* " Europe and America (?)
10. *Trombidium holosericeum* (phalangii, *Dug.*), magnified sketch of larva,  
Europe, Britain.
11. " " magnified sketch of perfect insect.
12. " " specimen of do.
13. " " magnified sketch of perfect insect, copied from  
figure by Walckenaër, Europe.
14. " *var. trigonum*, magnified sketch of perfect insect, Europe.
15. " *curtipes* " " "
16. " *fuliginosum* " " "
17. " *bicolor* " " "
18. " *fasciculatum* " " East Indies.
19. " " specimens of do.
20. " *tinctorium*, magnified sketch of do., Guinea, said to be used  
as a dye, but this seems doubtful.
21. " " specimens of do.
22. " *gryllarium*, magnified sketch of larva of do., N. America,  
a great enemy to the Rocky Mountains locusts.
23. " *sericeum*, magnified sketch of do., perhaps perfect insect  
of preceding.
24. " *miniaturum*, magnified sketch of perfect insect, Europe.
25. " *aurantiacum*, " of larva "
26. *Erythræus ruricola*, " of perfect insect, France.
27. *Actineda cornigera*, " " Europe.

# CASE X.

## MITES (*continued*).

### BDELLIDÆ.

1. *Molgus longicornis*, magnified sketch of insect, England.
2. *Scirus insectorum*, magnified sketch of larva of do., Europe, Britain, &c.  
A parasite on the wire worm beetle and other insects.
3. " *hexophthalmus*, magnified sketch of do., France.
4. " *obisium*, magnified sketch of do., France.
5. " *vestitus*, magnified sketch of do.

### HYDRACHNIDÆ (Fresh Water Mites).

6. *Limnochares aquaticus*, magnified sketch of mature insect, Europe
7. *Eylais extendens*, magnified sketch of freshly hatched larva, Europe.



- no.  
 8. *Eylais extendens*, magnified sketch of perfect insect.  
 9. *Hydrachna geographica*, magnified sketch of insect.  
 10. *Diplodontus scapularis*, magnified sketch of larva, Europe.  
 11.       "                       "  
 12. *Hydrochoreutes globulus*, magnified sketch of first stage of larva.  
 13. *Belostoma grandis*, from E. Indies, specimens with nymphs of *Hydrachna*  
       adhering to various parts of its body.  
 14. *Hydrochoreutes globulus*, magnified sketch of water-bug showing larva in  
       the nymph stage adhering to it.  
 15.       "                       "       magnified sketch of nymph stage of do.  
 16.       "                       "       magnified sketch of mature insect.  
 17. *Atax Bonzi*, magnified sketch of newly developed larva, feeds on fresh  
       water mussels, France.  
 18.       "       *globator*, magnified sketch of male insect, Europe (Denmark).  
 19.       "       "       magnified sketch of female.  
 20.       "       *buccinator*, magnified sketch of insect, Denmark.  
 21.       "       *miniata*, magnified sketch of insect, Europe.  
 22.       "       *varipes*                       "  
 23.       "       *histrionicus*, magnified sketch of male, Europe.  
 24.       "       "       magnified sketch of female.  
 25. *Pontarachna punctulum*, Mediterranean, near Naples, magnified sketch  
       of insect.

## CASE XI.

MITES (*continued*).

## GAMASIDÆ.

1. *Gamasus coleoptratorum*, magnified sketch of, parasitic on beetles, &c.
2.       "                       "       specimens.
3.       "       *marginatus*, magnified sketch, common, infests beetles.
4.       "                       "       specimen.
5.       "       *quadripunctatus*, magnified sketch, Old Calabar.
6.       "                       "       specimen.
7.       "       *crassipes*, magnified sketch.
8.       "       *tetragonoides*                       "
9.       "       *podager*                       "       Colombia.
10.       "                       "       specimen.
11. *Uropoda vegetans*, magnified sketch, parasitic on many insects.
12.       "                       "       specimens of do.
13. *Sejus marinus*, magnified sketch, on sea coasts of Britain.
14. *Halarachne halichæri*, magnified sketch of larva, found in nostrils of  
       seal.
15.       "                       "       of perfect insect       "

- NO.  
 16. *Dermanyssus nitzschii*, magnified sketch, Europe, from the nostrils of the goat-sucker.  
 17. „ „ *avium*, magnified sketch of do., empty, parasitic on poultry, and very injurious when in great numbers.  
 18. „ „ „ specimens of do.  
 19. „ „ „ vignette of chickens ("realistic chick").  
 20. „ „ „ magnified sketch of insect full fed.  
 21. „ „ „ specimen of do.  
 22. „ „ *pipistrellæ*, magnified figure, parasitic on bats.  
 23. „ „ *agilis*, magnified sketch.  
 24. *Pteroptus* (*Tinoglischrus*) *audouinii*, magnified sketch, parasitic on bats.  
 25. „ „ (*Diplostaspis*) *vespertilionis*, do.  
 26. „ „ „ „ specimens.  
 27. *Argas* (?) *pipistrellæ*, magnified sketch, France, larval form, supposed to be the larva of an *Argas*, but possibly of a *Pteroptus*.  
 28. „ „ *reflexus*, do., Britain and Continent, found on pigeons and in houses in some parts of the continent, very annoying.  
 29. „ „ *persicus*, do., Persia, &c., lives in houses, and its bite sometimes produces serious and even fatal consequences.  
 30. „ „ *americanus*, do., South of N. America.  
 31. „ „ *moubata*, do., Angola, bites very badly, like our bug, but the inflammation lasts much longer.  
 32. *Ornithodoros coriaceus*, magnified sketch, Mexico.  
 33. „ „ *talaje*, „ „ „ Mexico, a very troublesome blood sucker.

## CASE XII.

MITES (*continued*).

## IXODIDÆ (Ticks).

1. *Ixodes erinaceus*, male, enlarged figure, English dog tick.
2. „ „ „ specimens.
3. „ „ „ female, half full, enlarged figure.
4. „ „ „ specimens in phial.
5. „ „ „ female, full fed, enlarged figure.
6. „ „ „ specimens in phial.
7. „ „ *marginatus*, male, enlarged figure, another dog tick, sometimes very annoying both to man and animals.
8. „ „ „ specimens.
9. „ „ „ female, enlarged figure
10. „ „ „ female, specimens.
11. „ „ *ricinus*, enlarged sketch copied from Koch's figure. Continent.
12. „ „ *reduvius*, enlarged figure of female, copied from Audouin's figure, France.

- NO.  
 13. *Ixodes trabeatus*, enlarged figure of female, do., France.  
 14. „ *bovis*, male, enlarged figure, N. America  
 15. „ „ female, „ „  
 16. „ „ specimen, Utah.  
 17. „ *brevipes*, enlarged figure of female, Ceylon, Steppes of Aral, &c.  
 18. „ „ specimens.  
 19. „ *distipes*, enlarged figure of female, Tunis.  
 20. „ „ specimen.  
 21. „ *transversalis*, from orbital groove of *Python Sebæ*, enlarged figure.  
 22. „ „ enlarged sketch of head of *Python Sebæ*, to show  
     the place whence this tick is taken.  
 23. *Hyalomma corniger*, *Kol.*, do., Steppes of Aral.  
 24. *Adenopleura compressum*, enlarged figure of do., from beneath the scales  
     of the Pangolin, W. Africa.  
 25. *Xiphiastor rostratum*, enlarged figure of, Old Calabar.  
 26. „ „ specimen.  
 27. *Amblyomma rotundatum*, the Carapato from Brazil, enlarged figure of.  
 28. „ „ specimen.  
 29. „ *pacificum*, enlarged figure of, Sandwich Isles.  
 30. „ „ specimen.  
 31. *Ophiodes ophiophilus*, enlarged figure of, found on snakes in S. Africa.  
 32. „ *gervaisii*, male, enlarged figure, found between the scales of the  
     *Boa constrictor*, S. America.  
 33. „ „ female, do.  
 34. „ *gracilentus*, enlarged figure of, from the *Python Sebæ*.  
 35. „ *flavomaculatus*, enlarged figure of, from the *Python Sebæ*.  
 36. „ vignette sketch of *Python Sebæ*, the representative of the *Boa*  
     in W. Africa.

## CASE XIII.

MITES (*continued*).

## HALACARIDÆ (Marine Mites).

1. *Halacarus ctenopus*, magnified sketch of insect, British seas, dredged along  
     the shores.
2. „ *falcatus*, magnified sketch of insect „
3. „ *sculptus*, do. „
4. „ *rhodostigma*, magnified sketch of insect „
5. „ *notops*, magnified sketch of insect „

## ORIBATIDÆ.

6. *Damæus geniculatus*, magnified sketch of embryo, common in Europe,  
     fresh from egg of do.

- NO.  
 7. *Damæus geniculatus*, magnified sketch of larva.  
 8. „ „ sketch and specimens of perfect insect.  
 9. „ *auritus*, magnified sketch of perfect insect, very common in France.  
 10. *Leiosoma nitens*, do., France.  
 11. *Notaspis bipilis*, do., very common in France.  
 12. *Oribata orbicularis*, do., common near Paris.  
 13. „ *globula*, do., near Paris.  
 14. *Pelops acromios*, magnified sketch of larva, near Paris.  
 15. „ „ magnified sketch of perfect insect.  
 16. *Nothrus spiniger*, magnified sketch of larva, common on the Continent.  
 17. „ „ magnified sketch of perfect insect.  
 18. „ *horridus*, do., very common amongst moist mosses in France.  
 19. *Hermannia crassipes*, magnified sketch of larva, common near Paris.  
 20. „ „ magnified sketch of perfect insect.  
 21. *Cepheus vulgaris*, do., common on the Continent.  
 22. *Eremæus tibialis*, magnified sketch of larva, France.  
 23. *Hoplophora contractilis*, magnified sketch of larva, burrows in decaying fir wood.  
 24. „ „ magnified sketch of perfect insect  
 25. „ „ „ „ contracted.

## CASE XIV.

MITES (*continued*).

## ACARIDÆ (TYROGLYPHIDÆ, Cheese Mites, &amp;c.).

1. *Hypoderas brevis*, enlarged sketch of insect taken from under the skin of *Ardea nycticorax*, Europe.
2. „ *lineatus*, enlarged sketch of insect, from the pectoral muscles of *Ardea nycticorax*, Europe.
3. *Hypopus (Acarellus) muscæ*, enlarged sketch of insect, found on a small fly.
4. „ „ *pulicis*, enlarged sketch of insect, found in body of a dead flea.
5. *Trichodactylus xylocopæ*, enlarged sketch of insect, found on species of *xylocopa*, France.
6. *Homopus elephantis*, enlarged sketch of insect, found on hide of a stuffed elephant, also on a stuffed ox, Continent.
7. *Rhizoglyphus echinopus (dujardinii)*, magnified sketch of larva and pup Europe, Britain.
8. „ „ magnified sketch of enclosed *Hypopus*, erroneously supposed by Claparède to be the male of *Rhizoglyphus*.
9. „ „ magnified sketch of female, after Claparède.
10. „ „ „ „ after Robin, feeds on hyacinth bulbs.

- NO.  
 11. *Rhizoglyphus robinii*, magnified sketch of female.  
 12. *Tyroglyphus entomophagus*, sketch showing do. in various stages, and its eggs, &c., n dust taken from a neglected entomological box.  
 13. „ „ magnified sketch of insect.  
 14. „ „ siro, do., the cheese or flour mite, Europe.  
 15. „ „ longior, do., a cheese mite, Europe.  
 16. „ „ malus, magnified figure of insect, N. America, feeds on the scale insect of the apple tree.  
 17. *Glyciphagus prunorum*, magnified sketch of insect, Europe, from dried fruit.  
 18. „ „ cursor, do., Europe, feeds on animal débris.  
 19. „ „ hippopodos, do., Germany, from the crust of a horse's ulcerated foot.  
 20. „ „ spinipes, do., Trieste, feeds on dried cantharides.  
 21. „ „ plumiger, do., France, in the dust of cellars.  
 22. „ „ palmifer, do., France, from walls of cellars.

#### GENERA INCERTÆ SEDIS.

23. *Cheyletus eruditus*, sketch of under side magnified, feeds on other mites.  
 24. *Heteropus ventricosus*, a parasite in the nests of *Anthophora retusa*, England and France, magnified sketch of perfect insect newly developed.  
 25. „ „ magnified sketch of female.

#### CASE XV.

##### MITES (*continued*).

##### SARCOPTIDÆ (Itch and Louse Mites).

1. *Sarcoptes scabiei*, the itch insect of man, eggs of do., one opened showing the embryo.  
 2. „ „ magnified diagram of the itch-insect's burrow in the human skin, with the insect at the further end and egg-shells and debris behind.  
 3. „ „ magnified sketch of male, upper side.  
 4. „ „ of female, under side.  
 5. „ „ cati, magnified sketch of male (*S. cuniculi*, *Gerl.*, *S. minor*, *Furst.*), on the cat and rabbit.  
 6. „ „ mutans, magnified sketch of male, upper side, found on birds and mammals, especially injurious to domestic poultry.  
 7. „ „ male, side view  
 8. „ „ female, under side  
 9. *Psoroptes equi* (*Dermatokoptes communis*, *Furst.*), magnified sketch of male, upper side, itch insect of horse and other mammals.

- no.  
 10. *Symbiotes bovis*, magnified sketch of male, underside (*Dermatophagus bovis*, *Furst.*), on the ox.  
 11. *Sarcoptes nidulans*, magnified sketch of insect, on birds.  
 12. *Myobia musculi*, body louse-mite of mouse, magnified sketch of male.  
 13. „ „ magnified sketch of mandibles, adapted for holding hairs.  
 14. *Listrophorus gibbus*, magnified sketch of insect, a parasite on various small animals, found on pole cat, &c.  
 15. „ *leuckarti*, do., clasping the hair of a field mouse (of which it is a parasite).  
 16. *Myocoptes musculus*, head louse-mite of mouse, magnified sketch of male and female.  
 17. „ „ magnified sketch of female.  
 18. *Dermaleichus*, *sp.*, magnified sketch of male, a parasite on rooks and other birds.  
 19. „ *sp.*, do. of female.  
 20. „ *pici-majoris*, do., of male, a parasite on the great woodpecker.  
 21. „ do. of female.  
 22. „ *chelopus*, magnified sketch of insect, on the sparrow, perhaps the mature form of *Acarus passerinus*.  
 23. *Demodex folliculorum*, magnified sketch of insect, found in the sebaceous glands of the bulbs of the human hair.  
 24. „ „ magnified sketch of sebaceous follicle and bulb of human hair, showing the place where *Demodex folliculorum* is found.

## CASE XVI.

MITES (*continued*).

## PHYTOPTI, Gall Mites.

1. *Phytoptus taxi*, sketch of yew-tree twig with buds attacked by do.
2. „ „ magnified sketch of *Phytoptus taxi*.
3. „ „ of section of bud of yew tree attacked by do.
4. „ „ specimen from which sketch taken.
5. *Phytoptus coryli* (*Calycophthora avellanæ*, *Amer.*), hazel buds attacked by do.
6. „ „ sketch of buds so attacked.
7. „ *persicæ*, sketch of twig and buds of peach tree suffering from "le meunier," supposed to be produced by this species of *Phytoptus*.
8. „ *ribis*, currant buds attacked by.
9. „ „ sketch of do.
10. „ „ magnified sketch of first stage of larva (perhaps undergoing change of skin).

- NO.  
 11. *Phytoptus ribis*, magnified sketch of second stage.  
 12. „ „ *tiliæ*, lime tree leaf nail gall, specimen of gall on leaf.  
 13. „ „ „ sketch of leaf with galls.  
 14. „ „ „ magnified sketch of galls.  
 15. „ „ „ magnified section of a gall.  
 16. „ „ „ magnified figure of the insect, copied from Dujardin's figure.  
 17. „ „ (*Volvulifex*) *aceris*, sycamore leaf bearing galls of do.  
 18. „ „ „ „ sketch of leaf with do.  
 19. „ „ „ „ sketch of leaf of variety of sycamore (*Platanus Leopoldi*), with galls on do.  
 20. „ „ „ „ specimen of do.  
 21. „ „ „ „ under side of sycamore leaf, showing entrance to the galls on do.  
 22. „ „ „ „ sketch of do.  
 23. „ „ „ „ magnified section of gall of do.  
 24. „ „ (*Cephaloneon*) *myriadeum*, specimen of leaves of common maple, with galls on do.  
 25. „ „ „ „ sketch of do.

## CASE XVII.

MITES (*continued*).PHYTOPTI (*continued*).

1. *Phytoptus* (*Typhlodromus*) *pyri*, sketch of leaf of pear tree bearing galls of do.  
 2. „ „ „ „ specimens of do.  
 3. „ „ „ „ magnified section of gall of do.  
 4. „ „ „ „ magnified sketch of larva of do., after Scheuten.  
 5. „ „ „ „ perfect insect, do. (but this probably erroneous).  
 6. „ „ (*Ceratoneon*), *attenuatum* leaves of sloe bearing galls of do.  
 7. „ „ „ „ sketch of do.  
 8. „ „ (*Volvulifex*) *pruni*, leaves of plum bearing galls of do.  
 9. „ „ „ „ sketch of leaf of do.  
 10. „ „ „ „ magnified section of gall of do., showing no inhabitants and filled with hairs.  
 11. „ „ *salicis*, leaves of black willow bearing galls of do.  
 12. „ „ „ „ sketch of do.  
 13. „ „ „ „ magnified sketch of do.  
 14. „ „ „ „ magnified section of gall of do., half filled with *Phytopti*.  
 15. „ „ „ „ magnified sketch of insect.

EXAMPLES OF FUNGOID GROWTHS LIKELY TO BE MISTAKEN FOR  
MITE GALLS.

- no.  
16. *Erineum tilia*, a growth on the lime-tree leaf produced by hypertrophy,  
and often mistaken for work of an insect.  
17. *Æcidium abietinum*, a fungus growing on leaf of *Picea cephalonica*,  
sometimes mistaken for insect work.  
18. „ „ magnified sketch of do.  
19. *Röestelia lacerata*, a fungoid growth on hawthorn leaf.  
20. „ „ magnified sketch of do.  
21. „ *cancellata*, first stage of a fungus growth on pear tree leaves,  
often mistaken for insect work.  
22. „ „ sketch of do.  
23. „ „ second stage of growth on pear tree leaves, upper  
side of leaf.  
24. „ „ under side of leaf.

CASE XVIII.

ANOPLURA—(Lice).

MALLOPHAGA—(Feather Feeders).

1. *Menopon pallidum*, specimens, infests the domestic fowl.  
2. „ „ enlarged figure  
3. „ „ illustrative vignette (cocks and hens).  
4. „ *perdricis*, infests the partridge.  
5. „ „ enlarged figure.  
6. „ „ illustrative vignette (partridge).  
7. „ *fulvo maculatum*, specimens, infests the quail.  
8. „ „ enlarged figure  
9. „ „ illustrative vignette (quail).  
10. *Trinoton luridum*, specimens, infests the duck.  
11. „ „ enlarged figure.  
12. „ „ illustrative vignette (duck).  
13. *Nirmus cameratus*, specimens, infests the black cock.  
14. „ „ enlarged figure.  
15. „ „ illustrative vignette (black cock and grey hen).  
16. „ *claviformis*, specimens, infests the pigeon.  
17. „ „ enlarged figure.  
18. „ „ illustrative vignette (carrier pigeon).  
19. *Goniocotes hologaster*, specimens, infests the domestic fowl.  
20. „ „ enlarged figure.  
21. „ „ illustrative vignette (fowl dusting).  
22. *Goniodes falcicornis*, specimens of young insect, infests the pea fowl,



- NO.  
 23. *Goniodes falcicornis*, enlarged figure.  
 24. " " specimens of mature insect.  
 25. " " enlarged figure of do.  
 26. " " illustrative vignette (peacock).  
 27. " *stylifer*, specimens, infests the turkey.  
 28. " " enlarged figure  
 29. " " illustrative vignette (turkey).  
 30. " *numidianus*, specimens, infests the guinea fowl.  
 31. " " enlarged figure.  
 32. " " illustrative vignette (guinea fowl).  
 33. " *colchici*, specimens, infests the pheasant.  
 34. " " enlarged figure.  
 35. " " illustrative vignette (pheasant).  
 36. " *dissimilis*, specimens, infests the domestic fowl.  
 37. " " enlarged figure.  
 38. " " illustrative vignette (fowl).  
 39. " *tetraonis*, specimens, infests the grouse.  
 40. " " enlarged figure.  
 41. " " illustrative vignette (grouse).  
 42. *Lipeurus stellaris*, specimens, infests the pigeon.  
 43. " " enlarged figure.  
 44. " " illustrative vignette (pigeons).  
 45. " *variabilis*, specimens, infests the domestic fowl.  
 46. " " enlarged figure.  
 47. " " illustrative vignette (chickens).  
 48. " *jejunus*, specimens, infests the goose.  
 49. " " enlarged figure.  
 50. " " illustrative vignette (geese).  
 51. " *polytrapezius*, specimens, infests the pochard, &c.  
 52. " " enlarged figure  
 53. " " illustrative vignette (teal).  
 54. *Ornithobius cygni*, specimens, infests the swan.  
 55. " " enlarged figure.  
 56. " " illustrative vignette (swan).

## CASE XIX.

ANOPLURA (*continued*).MALLOPHAGA (Fur feeders) (*continued*).

1. *Trichodectes similis*, specimens, infests the red deer.
2. " " enlarged figure.
3. " " illustrative vignette (red deer).
4. " *longicornis*, specimens, infests the fallow deer.

- |     |                           |                                      |
|-----|---------------------------|--------------------------------------|
| no. |                           |                                      |
| 5.  | Trichodectes longicornis, | enlarged figure.                     |
| 6.  | „ „                       | illustrative vignette (fallow deer). |
| 7.  | „ sphærocephalus,         | specimens, infests sheep.            |
| 8.  | „ „                       | enlarged figure.                     |
| 9.  | „ „                       | illustrative vignette (sheep).       |
| 10. | „ scalaris,               | specimens, infests the ox and ass.   |
| 11. | „ „                       | enlarged figure.                     |
| 12. | „ „                       | illustrative vignette (cow).         |
| 13. | „ equi,                   | infests the horse.                   |
| 14. | „ „                       | enlarged figure.                     |
| 15. | „ „                       | illustrative vignette (horse).       |
| 16. | „ latus,                  | specimens, infests the dog.          |
| 17. | „ „                       | enlarged figure.                     |
| 18. | „ „                       | illustrative vignette (dog).         |
| 19. | „ subrostratus,           | specimens, infests the cat.          |
| 20. | „ „                       | enlarged figure.                     |
| 21. | „ „                       | illustrative vignette (cat).         |

## HÆMATOPINA—(Blood Suckers.)

- |     |                         |                                                |
|-----|-------------------------|------------------------------------------------|
| 22. | Hæmatomyzus elephantis, | specimen, infests the elephant.                |
| 23. | „ „                     | enlarged figure.                               |
| 24. | „ „                     | illustrative vignette (elephant).              |
| 25. | Hæmatopinus acanthopus, | specimens, infests the field mouse.            |
| 26. | „ „                     | enlarged figure.                               |
| 27. | „ „                     | illustrative vignette (field mouse).           |
| 28. | „ spinulosus,           | specimens (eggs and insects), infests the rat. |
| 29. | „ „                     | enlarged figure of ditto.                      |
| 30. | „ „                     | illustrative vignette (brown rat).             |
| 31. | „ ventricosus,          | specimens, infests the rabbit.                 |
| 32. | „ „                     | enlarged figure.                               |
| 33. | „ „                     | illustrative vignette (rabbit).                |
| 34. | „ lyriocephalus,        | infests the hare.                              |
| 35. | „ „                     | enlarged figure.                               |
| 36. | „ „                     | illustrative vignette (hare).                  |
| 37. | „ suis,                 | specimens, infests the sow.                    |
| 38. | „ „                     | enlarged figure.                               |
| 39. | „ „                     | illustrative vignette (sow).                   |
| 40. | „ vituli,               | specimen, said to be parasitic on the calf.    |
| 41. | „ „                     | enlarged figure.                               |
| 42. | „ „                     | illustrative vignette (calf).                  |
| 43. | „ eurysternus,          | specimens (several), infests the ox.           |
| 44. | „ „                     | enlarged figure.                               |
| 45. | „ „                     | illustrative vignette (cattle).                |

- no.  
 46. *Hæmatopinus asini*, specimens, infests the ass.  
 47. „ „ „ enlarged figure.  
 48. „ „ „ illustrative vignette.  
 49. „ „ „ piliferus, specimens, infests the dog.  
 50. „ „ „ enlarged figure.  
 51. „ „ „ illustrative vignette (dog).  
 52. „ „ „ quadrumanus, specimens, infests a species of monkey, from South America.  
 53. „ „ „ enlarged figure.  
 54. „ „ „ illustrative vignette (monkey).

## CASE XX.

ANOPLURA (*continued*).

## PEDICULI (Lice of Man).

1. *Phthirus inguinalis*, crab louse, specimens of insect.
2. „ „ „ sketch of do.
3. *Pediculus vestimenti*, the body louse, European variety, specimens of insect.
4. „ „ „ sketch of do.
5. „ „ „ specimen of insect on a glass slide.
6. „ „ „ anterior claw of do., much magnified.
7. „ „ „ capitis, head louse, European variety, specimens of insect.
8. „ „ „ sketch of do.
9. „ „ „ specimen of insect on a glass slide.
10. „ „ „ anterior claw of do., much magnified.
11. „ „ „ vignette sketch, European race.
12. „ „ „ Esquimaux variety, specimens of insect and vignette sketch of do.
13. „ „ „ specimen of insect on a glass slide.
14. „ „ „ vignette sketch of anterior claw, much magnified.
15. „ „ „ vignette sketch, Esquimaux.
16. „ „ „ Californian variety, specimens of insect.
17. „ „ „ sketch of do.
18. „ „ „ specimen of insect on a glass slide.
19. „ „ „ of anterior claw, much magnified.
20. „ „ „ vignette sketch, Californian Indian.
21. „ „ „ Andian variety, Quito, specimens of insect.
22. „ „ „ sketch of do.
23. „ „ „ specimen of insect on a glass slide.
24. „ „ „ of anterior claw, much magnified.
25. „ „ „ vignette sketch, South American Indian.
26. „ „ „ Fuegian variety, specimens of insect.
27. „ „ „ sketch of do.

|     |                             |                                            |
|-----|-----------------------------|--------------------------------------------|
| NO. |                             |                                            |
| 28. | Pediculis capitis,          | specimen of insect on a glass slide.       |
| 29. | " "                         | sketch of anterior claw, much magnified.   |
| 30. | " "                         | vignette sketch, Fuegians.                 |
| 31. | " "                         | West African variety, specimens of insect. |
| 32. | " "                         | sketch of do.                              |
| 33. | " "                         | specimen of insect on a glass slide.       |
| 34. | " "                         | of anterior claw, much magnified.          |
| 35. | " "                         | vignette sketch, West African Negro.       |
| 36. | " "                         | Mozambique variety, specimen of insect.    |
| 37. | " "                         | sketch of do.                              |
| 38. | " "                         | specimen of insect on a glass slide.       |
| 39. | " "                         | of anterior claw, much magnified.          |
| 40. | " "                         | vignette sketch, Mozambique Africander.    |
| 41. | " "                         | specimens of insect, Hindoo variety.       |
| 42. | " "                         | sketch of do.                              |
| 43. | " "                         | specimen of insect on a glass slide.       |
| 44. | " "                         | of anterior claw, much magnified.          |
| 45. | " "                         | vignette sketch, Hindoo Brahmin.           |
| 46. | " "                         | Australian variety, specimens of insect.   |
| 47. | " "                         | sketch of do.                              |
| 48. | " "                         | specimen of insect on a glass slide.       |
| 49. | " "                         | of anterior claw, much magnified.          |
| 50. | " "                         | vignette sketch, Australian.               |
| 51. | Vignette, Causes of vermin: | Dirt and overcrowding.                     |
| 52. | " "                         | Misery.                                    |
| 53. | " "                         | Disease.                                   |
| 54. | " "                         | Remedies, Cleanliness, &c.                 |

CASE XXI.

THYSANURA.—(Spring-tails).

COLLEMBOLA.

1. *Smynturus fuscus*, sketch of insect, injures plants, especially in frames, cucumber beds, &c.
2. *Papirus ornatus* " " " "
3. " *fuscus* " " " "
4. *Orchesella cincta*, specimens of insect.
5. " " sketch of do.
6. " " "
7. *Tomocerus longicornis* "
8. " " sketch of magnified scale of do., used as a test by microscopists.
9. " *plumbeus*, sketch of insect.

- no.  
 10. *Seira buskii*, sketch of insect.  
 11. „ „ sketch of scale of do. magnified, used as a test by microscopists.  
 12. *Templetonia crystallina*, sketch of insect.  
 13. *Beckia argentea* „ „  
 14. *Lepidocyrtus curvicolis* „ „  
 15. „ „ magnified scale of do., used as a test by microscopists.  
 16. *Degeeria annulata*, sketch of insect.  
 17. *Isotoma viatica* „ „  
 18. „ *grisea* „ „  
 19. *Achorutes purpurascens* „ „  
 20. *Podura aquatica* „ „  
 21. *Lipura fimetaria* „ „ injurious to carrots, &c.  
 22. *Anoura muscorum* „ „  
 23. „ *granaria* „ „

## LEPISMIDÆ.

24. *Campodea staphylinus*, sketch of insect.  
 25. *Japyx solifugus* „ „  
 26. *Lepisma saccharina* „ „  
 27. „ „ sketch of magnified scale of do., used as a test by microscopists.  
 28. *Machilis maritima*, sketch of insect.  
 29. „ „ sketch of magnified scale of do., used as a test by microscopists.

## CASE XXII.

## HEMIPTERA—HOMOPTERA.

## COCCIDÆ.—(Scale Insects.) DIASPIDÆ.

1. *Diaspis bromeliæ*, sketch of scale, infests the pine apple in tropical regions.  
 2. „ „ sketch of pine apple, with scale on some of its leaves.  
 3. „ *ostreæformis*, sketch of scale, infests the pear tree, &c.  
 4. „ „ magnified sketch of scale, upper and under side.  
 5. „ *rosæ*, infests rose bushes. — Specimens of twigs covered with scale of do.  
 6. „ „ magnified sketch of male and female scales.  
 7. „ „ rose twigs covered by do.  
 8. „ „ magnified sketch of female scales of do.  
 9. „ „ „ sketch of larva.  
 10. *Aspidiotus nerii*, oleander scale, infests the oleander, &c.—Specimens on holly leaves.  
 11. „ „ magnified sketch of female scale of do., upper and under side.

- no.  
 12. *Aspidiotus camelliae*, magnified sketch of do., infests the camellia, green houses.  
 13. „ *epidendri*, magnified sketch of male, infests various species of epidendrium in hothouses.  
 14. „ *pandani*, magnified sketch of do., found on species of *Pandanus* in hothouses.  
 15. „ „ specimens of do. on leaf of *Pandanus graminifolia*.  
 16. „ „ magnified sketch of leaf of do. covered by do.  
 17. „ *limoniphilus*, attacks the lemon, sketch of scale, upper and under sides.  
 18. „ „ sketch of lemon attacked by do., early stage.  
 19. „ „ model of lemon attacked by do., with specimens on model, showing the appearance of the injury done to the lemon.  
 20. „ „ model of lemon attacked by do., later stage.

## CASE XXIII.

HEMIPTERA—HOMOPTERA—*continued.*COCCIDÆ.—(Scale Insects). DIASPIDÆ—*continued.*

1. *Chionaspis fraxini*, sometimes completely destroys the ash tree by covering its branches, sketch of female with eggs.
2. „ „ sketch of scale, much enlarged.
3. „ „ specimen of branch of ash tree covered by do.
4. „ *vaccinii*, sketch of female scale, on *Vaccinium myrtillus* (whortle berry) in Switzerland.
5. *Fiorinia pellucida*, sketch of scale, found in hothouses on such plants as *Areca*, *Phytelephas*, &c.
6. *Parlatoria zizyphus*, sketch of scale, infests the orange tree in the south of Europe.
7. *Mytilaspis aurantii*, specimens of scale, on oranges.
8. „ „ sketch of do., slightly enlarged.
9. „ „ do., much enlarged.
10. „ „ model of sweet lime bearing specimens.
11. „ *conchiformis* (*M. pomorum*, *Sign.*), specimens, on twigs of apple trees.
12. „ „ figure of do. on currant twigs, slightly enlarged.
13. „ „ more magnified.
14. „ „ much magnified.
15. „ „ still more enlarged, showing eggs.
16. „ *fici*, infests the fig tree, especially the leaves.
17. „ „ specimens on a leaf.
18. „ „ sketch of young figs attacked by do.

NO.

19. *Mytilaspis pinnæformis*, lives on the orchidaceous genus *Cymbidium*, sketch enlarged, upper and under side.
20. " " female removed from scale.
21. *Leucaspis monophylli*, with female removed from scale, covers the leaves of *Pinus monophyllus* in Rocky Mountains.
22. " " sketch magnified, upper and under side.
23. " " twig of *Pinus monophyllus*, with scales.

## CASE XXIV.

HEMIPTERA—HOMOPTERA—*continued.*COCCIDÆ.—(Scale Insects)—*continued.* LECANIDÆ

1. *Pollinia costæ*, magnified sketch of insect, found on the olive, S. Europe.
2. *Asterolecanium bambusæ*, specimens of insect, infests the bamboo.
3. " " magnified sketch of do.
4. " " magnified sketch of fringe of tubes that surround the scale of do.
5. " " sketch of bamboo infested by do.
6. " " specimens of scale on bamboo leaf.
7. *Eriopeltis festuæ*, magnified sketch of insect, male, lives on species of fescue grass, France.
8. " " adult female.
9. *Ceroplastes rusci*, attacks the fig tree, sketch of fig branch covered by do.
10. " " magnified sketch of scale.
11. " " do.
12. " " sketch of full grown scales.
13. " " magnified sketch of do.
14. " *chilensis*, magnified sketch of scale, found on a tree in Chili, with pinnated leaves (*Acacia*?).
15. " *ceriferus*, the wax-producing insect of Brazil, magnified sketch of scale.
16. *Pulvinaria vitis*, infests the vine, sketch of vine cane attacked by do.
17. " " magnified sketch of scale, France.
18. " *gasteralpha*, very destructive to the sugar canes in the Mauritius, sketch of sugar cane attacked by do.
19. " *betularia*, infests the birch, sketch of birch twig with scales.
20. " " specimens of do.
21. " " ~~sp.~~ specimens of scales from plum tree, Britain.
22. " " magnified sketch of scales.
23. " *ribesiæ*, specimens of scales, found on the gooseberry, hawthorn, &c., in France.
24. " " magnified sketch of do.
25. " " do.

## CASE XXV.

HEMIPTERA—HOMOPTERA—*continued.*COCCIDÆ.—(Scale Insects.) LECANIDÆ—*continued.*

- |     |                                           |                                                                                                            |
|-----|-------------------------------------------|------------------------------------------------------------------------------------------------------------|
| no. |                                           |                                                                                                            |
| 1.  | Lecanium hesperidum,                      | infests the orange tree, sketch of orange twigs with specimens, S. Europe.                                 |
| 2.  | „ „                                       | magnified sketch of insect.                                                                                |
| 3.  | „ „                                       | sketch of parasite found under scale of do.                                                                |
| 4.  | „ lauri,                                  | specimens on bay leaves, found in the South of France.                                                     |
| 5.  | „ „                                       | magnified sketch of insects.                                                                               |
| 6.  | „ krideæ,                                 | magnified sketch of specimen, Himalaya.                                                                    |
| 7.  | „ „                                       | specimens on leaf of Kridea, undescribed.                                                                  |
| 8.  | „ eriostemi,                              | sketch of specimen, plant houses in Britain.                                                               |
| 9.  | „ „                                       | specimens on slide.                                                                                        |
| 10. | „ sp.,                                    | on apple tree in Wales, magnified sketch of insects.                                                       |
| 11. | „ testudo,                                | magnified sketch of do. on hothouse plants.                                                                |
| 12. | „ persicæ (patellæformis, <i>Curt.</i> ), | sketch of do., lives on the peach tree.                                                                    |
| 13. | „ „                                       | sketch of do., magnified.                                                                                  |
| 14. | „ rotundum,                               | sketch of do., attacks the peach tree, France.                                                             |
| 15. | „ „                                       | sketch of do., magnified.                                                                                  |
| 16. | „ „                                       | sketch of male scale. do.                                                                                  |
| 17. | „ rugosum,                                | magnified sketch of female scale, another scale insect that attacks the peach tree, France.                |
| 18. | „ „                                       | male scale, do.                                                                                            |
| 19. | „ pyri,                                   | attacks the pear tree, magnified sketch of insect.                                                         |
| 20. | „ æsculi,                                 | taken on the horse chestnut in Paris, do. of male.                                                         |
| 21. | „ coryli,                                 | on the hazel in France, do. of insect.                                                                     |
| 22. | „ filicum,                                | sketch of fern covered with do., found on Pteris argyrea in hothouses.                                     |
| 23. | „ „                                       | specimens of insect.                                                                                       |
| 24. | „ „                                       | magnified sketch of do.                                                                                    |
| 25. | „ hibernaculorum,                         | the brown scale of horticulturists, very common in hothouses, specimen of leaf of Ardisia covered with do. |
| 26. | „ „                                       | magnified sketch of leaf of do. bearing them.                                                              |
| 27. | „ „                                       | „ sketch of scale.                                                                                         |





- NO.  
 19. *Carteria lacca*, magnified diagram of mature female of do., dissolved out of the lac.  
 20. " " magnified sketch of twig incrustated by lac, showing position of the insects, and how they are surrounded by the incrustation.  
 21. " " transverse sections of lac incrustations, showing position occupied by the insects.  
 22. " " magnified sketch of transverse section of lac incrustation, showing the cells which mark the place occupied by the insects.  
 23. " " sketch of twigs incrustated by lac; from Siam, natural size.  
 24. " " twigs incrustated by lac, from Siam.  
 25. " " twigs incrustated by lac, from Bengal.

## CASE XXVII.

HEMIPTERA—HOMOPTERA—*continued.*COCCIDÆ.—(Scale Insects.) LECANIDÆ—*continued.*

## (Kermes Insects).

1. *Kermes ilicis*, *Linn.* (*bauhinii*, *Planchon*), specimen of *Quercus ilicis*, bearing scales of do., South of Europe and Algeria.
2. " " sketch of the above.
3. " " magnified sketch of egg taken from dried scale.
4. " " magnified sketch of embryonal larva taken from dried scale.
5. " " magnified sketch of male insect.
6. " " specimens of scales.
7. " " magnified sketch of do.
8. " " specimen of *Quercus ilicis*, *Var.*, *coccifera*, bearing scales of do., South Europe.
9. " *baphica* (*vermilio*, *Planchon*), sketch of twig of *Quercus ilicis*, *Var.*, *coccifera*, bearing scales of do.
10. " " Sketch of do., slightly magnified.
11. " *variegatus*, magnified sketch of embryonal larva, South Europe.
12. " *gibbosus*, sketch of specimen bearing scales of do., South Europe.

## ACANTHOCOCCITES.

13. *Nidularia pulvinatus*, South Europe, magnified sketch of adult female, very young, not impregnated.
14. " " " of an old mother, side view.
15. " " " of pupa of male.
16. *Gossyparia ulmi*, South France, magnified sketch of embryonal larva.
17. " " " of adult young female.
18. " " " of nymph of male.

NO.

19. *Antonina purpurea*, France, sketch of dog's grass with three sacs of this species.
20. „ „ magnified sketch of young mother without legs or antennæ.
21. *Capulinia sallei*, magnified sketch of embryo just hatched, Mexico.
22. „ „ magnified sketch of old mother, all but the posterior legs have disappeared.
23. *Eriococcus buxi*, sketch of a leaf of box bearing both male and female, natural size and magnified, South France.
24. „ „ magnified sketch of adult mother.
25. „ *thymi*, magnified sketch of mother before she is enclosed in her sac, France.

## CASE XXVIII.

HEMIPTERA—HOMOPTERA—*continued.*COCCIDÆ.—(Scale Insects)—*continued.*

## COCCITES.—(Cochineal insects.)

1. *Dactylopius adonidum*, the mealy bug of our hothouses, magnified sketch of do.
2. „ „ specimens of do.
3. „ „ magnified sketch of tarsus of do.
4. „ *citri*, magnified sketch of female, South France.
5. „ *vitis*, „ of embryonal larva of the female, South Europe, Greece, &c.
6. „ *cyperi*, magnified sketch of male, hothouses.
7. *Ripersia corynepthori*, France, magnified sketch of female deprived of her cottony envelope.
8. „ „ magnified sketch of larva of male.
9. *Westwoodia perrissii*, South France, magnified sketch of female.
10. *Coccus cacti*, the cochineal insect, sketch of the *Cactus cochinellifer* of Mexico, on which this species is cultivated.
11. „ „ magnified sketch of the leaf of the *Cactus cochinellifer*, with the insect upon it.
12. „ „ magnified sketch of female in the fresh living state.
13. „ „ specimen of the female in the dried state in which they are sold for a dye.
14. „ „ magnified sketch of do.
15. *Icerya sacchari*, very destructive to the sugar plantations in the Mauritius, magnified sketch of female.
16. *Guerinia serratulæ*, magnified sketch of adult female, South East France and Algeria.

- NO.  
 17. *Ortonia bouvari*, used as a dye in Guatemala, specimen of do. the largest known species of the whole family.  
 18. „ „ magnified sketch of do.  
 19. „ *uhleri*, magnified sketch of do., from the grape—Columbia.  
 20. *Monophlebus leachii*, magnified sketch of female larva, Malabar.  
 21. „ „ „ „ male insect.  
 22. *Callipappus westwoodii*, magnified sketch of embryonal larva.  
 23. „ „ „ „ female.  
 24. *Porphyrophora polonica*, var. *perrissii*, magnified sketch of embryonal larva, France.  
 25. „ „ magnified sketch of adult female.  
 26. *Orthesia urticae*, magnified sketch of larva of male.  
 27. „ „ „ „ female, with calcareous envelope.  
 28. „ „ specimens of do.

## CASE XXIX.

HEMIPTERA—HOMOPTERA—*continued*.COCCIDÆ.—(Scale Insects)—*continued*. ALEURODES.

1. *Aleurodes proletella*, infests the cabbage, and is sometimes very injurious, magnified sketch of egg.  
 2. „ „ „ „ sketch of newly-hatched larva.  
 3. „ „ „ „ model of cabbage leaf infested by do.  
 4. „ „ „ „ enlarged sketch of larva.  
 5. „ „ „ „ sketch of perfect insect much magnified.  
 6. „ „ „ „ model of cabbage leaf attacked by do.  
 7. „ *brassicæ*, infests the cabbage, magnified sketch of larva.  
 8. „ „ „ „ magnified sketch of perfect insect.  
 9. „ *immaculata*, model of ivy leaves attacked by do.  
 10. „ „ „ „ sketch of do.  
 11. „ „ „ „ specimens of do.  
 12. „ „ „ „ specimens of bay leaf do.  
 13. „ *phillyrea*, specimen of leaves of *Phillyrea media* covered with scales of do.  
 14. „ „ „ „ specimens of insect.  
 15. „ „ „ „ magnified sketch of do.  
 16. „ „ „ „ sketch of larva.  
 17. „ „ „ „ sketch of cotton-exuding tube from back of scale.  
 18. „ *vaporariorum*, on orchid leaves. Hot houses.  
 19. „ „ „ „ sketch of do., both natural size and magnified.  
 20. „ *jelinckii*, magnified sketch of larva, S. Europe.  
 21. „ *aceris*, magnified sketch of larva, male, France.  
 22. „ „ „ „ „ „ female.

## CASE XXX.

HEMIPTERA—HOMOPTERA—*continued.*

## APHIDEÆ.—(Plant Lice.)

1. *Adelges abietis*, plaster of model of cone gall of spruce produced by do.
2. " " specimens of cone galls of spruce fir.
3. " " do do.
4. " " sketch of young cone gall much magnified.
5. " " sketch of old do. do.
6. " " sketch of commencement of cone gall, eggs laid at the base of bud of spruce.
7. " " magnified sketch of eggs laid by do. at base of spruce bud.
8. " " sketch of cone gall on spruce beginning to form.
9. " " sketch of cone gall further advanced.
10. " " sketch of section of cone gall.
11. " " sketch of larva, fresh specimen, magnified.
12. " " do., from dried specimen, magnified.
13. " " specimen of perfect insect.
14. " " sketch of do. from dried specimen, magnified.
15. " *strobilobius*, sketch of distorted twigs or cone galls produced by do.
16. " " specimens of do.
17. " " sketch of young cone gall much magnified.
18. " " sketch of larva much magnified.
19. " *sp.* (*occidentalis*), specimen of cone gall produced by do. on *Abies engelmanni*, from Rocky Mountains.
20. " " sketch of do.
21. " *sp.*, twigs of *Picea nordmanniana* attacked by do.
22. " " sketch of twigs attacked by do.
23. " *laricis*, sketch of larch buds attacked by do.
24. " " magnified sketch of young family of do. at larch bud.
25. *Anisophleba pini*, sketch of do. on leaves of pine.

## CASE XXXI.

HEMIPTERA—HOMOPTERA—*continued.*APHIDEÆ.—(Plant Lice)—*continued.*

1. *Adelges piceæ*, piece of bark of silver fir covered by excretion of do.
2. " *corticalis*, twig of Weymouth pine attacked by do.
3. " " sketch of branch of Weymouth pine attacked by do.
4. " *fagi*, piece of bark of beech trees covered by secretion of do.
5. " " sketch of beech trees with their stems whitened by the secretion of do.

6. *Schizoneurus lanuginosa*, young bladder galls, on elm twigs, produced by do.
7.     "                 "                                 do.
8.     "                 "                                 do.
9.     "                 "                 stuffed bladder galls, on artificial elm twig, produced by do.
10.    "                 "                 sketch of bladder gall produced by do. and section thereof.
11. *Eriosoma gallarum ulmi*, elm leaf gall produced by do.
12.    "                 "                                 do.
13.    "                 "                 sketch of do.
14.    "                 "                 magnified sketch of gall produced on elm leaf by do.
15.    "         *sp.*, raspberry gall on elm twigs produced by do. from lake Como.
16.    "                 "                 sketch of do.
17. *Pemphigus bursarius*, purse gall on the leaf-stalk of the poplar, produced by do.
18.    "                 "                 sketch of do.
19.    "                 "                 purse gall on midrib of poplar leaf, produced by do.
20.    "                 "                 sketch of do.
21. Tamarisk galls produced by a species of aphid, from Tripoli.
22.    "                 "                 magnified sketch of galls.
23.    "                 "                 "                 sketch of aphid taken from tamarisk galls, too much injured to allow the species to be determined.
24.    "                 "                 specimens of do.
25. Japanese or Chinese galls produced by a species of aphid.
26. Horn gall, from India (Katingka gall).

### CASE XXXII.

HEMIPTERA—HOMOPTERA—*continued.*

APHIDEÆ.—(Plant Lice)—*continued.*

- |    |                       |                                                                         |
|----|-----------------------|-------------------------------------------------------------------------|
| 1. | Phylloxera vastatrix, | introduced into Britain, portion of vine leaf injured by attacks of do. |
| 2. | „ „                   | section of vine leaf, magnified, showing eggs deposited by do.          |
| 3. | „ „                   | sketch of do., larval stage, magnified.                                 |
| 4. | „ „                   | young specimens of do.                                                  |
| 5. | „ „                   | specimens of larvæ.                                                     |
| 6. | „ „                   | sketch of mature wingless female, magnified.                            |
| 7. | „ „                   | specimens of insect.                                                    |
| 8. | „ „                   | sketch of winged form of do., magnified.                                |

- NO.  
 9. *Phylloxera vastatrix*, sketch of do. form it assumes on the root, magnified.  
 10. " " specimens from root.  
 11. " " sketch of rootlets of vine, magnified, showing swellings produced by do.  
 12. " " sketch of root of vine showing parts rotting where attacked by do.  
 13. " " sketch of vine tree withering under attacks of do.  
 14. *Eriosoma lanigera*, American blight, sketch of branchlet of apple tree cankered by do.  
 15. " " another example of do.  
 16. " " sketch of larva, much magnified.  
 17. " " twigs of apple tree infested by do.  
 18. " " canker on apple tree produced by do.  
 19. " " another specimen of do.  
 20. " " "  
 21. " " "  
 22. " " root of apple tree attacked by do.  
 23. " " sketch of twig of pear tree cankered by do.  
 24. " " rootlets of pear tree with growth caused by do.  
 25. " " sketch of do. slightly magnified.  
 26. " " sketch of larva of do. at a more advanced stage, much magnified.  
 27. " " sketch of perfect insect, winged state, magnified.

## CASE XXXIII.

HEMIPTERA—HOMOPTERA—*continued.*APHIDEÆ.—(Plant Lice)—*continued.*

1. *Aphis* (*Siphonophora*) *lactuæ*, attacks the lettuce, sketch of winged female, producing living young, summer brood.
2. " " specimens of perfect insect in the act of producing them.
3. " " magnified sketch of dried wingless female of do., producing living young.
4. " " magnified sketch of newly-born insect, summer brood.
5. " *populi*, infests the poplar, specimens of do., newly-born.
6. " " magnified sketch of young do., legs and antennæ developed.
7. " *mali*, the green fly of the apple, magnified sketch of mass of eggs which produce the winter brood, as they appear when recently laid, fresh and yellow.
8. " " twigs thickly covered with eggs.
9. " " sketch of do.
10. " " magnified sketch of do., as they appear after being some time aïd, black.

- NO  
 11. *Aphis mali*, sketch of apple tree shoot and blossom, with green fly beginning to appear.  
 12. " " specimen of newly-hatched larvæ from eggs of do.  
 13. " " magnified sketch of larva of do., only one day hatched, winter brood.  
 14. " " magnified sketch of mature larva.  
 15. " " specimens of mature larvæ and perfect insects of do.  
 16. " " magnified sketch of perfect insect.  
 17. " brassicæ, the green fly of the turnip, specimens of do.  
 18. " " sketch of perfect insect, magnified.  
 19. " " specimens swept from window of a country house in 1870 to show their vast numbers.  
 20. " cerealis, specimens of do., infests wheat, &c.  
 21. " " sketch of larva of do., magnified.  
 22. " papaveris, sketch of poppy, one of the plants specially attacked by do.  
 23. " " sketch of wingless female, magnified.  
 24. " " sketch of pupa, magnified.  
 25. " " model of beanstalk attacked by do.  
 26. *Rhizobius subterraneus*, model of parsnip root on which do. lives.  
 27. " " sketch of insect, magnified.  
 28. " " specimens of do.  
 29. " " model of celery root on which do. is found.  
 30. *Atheroides serrulatus*, sketch of insect.  
 31. " " specimens of do.

## CASE XXXIV.

HEMIPTERA—HOMOPTERA—*continued.*APHIDEÆ.—(Plant Lice)—*continued.*

1. *Aphis aceris*, magnified sketch of larva, from sycamore.
2. " " specimens of do.
3. " " sketch of perfect insect, magnified.
4. " " specimens of do.
5. " " sketch of twig of sycamore infested by do.
6. " cerasi, magnified sketch of larva, from cherry tree.
7. " " specimens of do.
8. " " sketch of perfect insect, magnified.
9. " " specimens of do.
10. " " sketch of cherry twig attacked by do.
11. " humuli, the hop fly, sketch of hop infested by do.
12. " " specimens of larvæ.
13. " " magnified sketch of do.
14. " " specimens of perfect insect.



- NO.  
 15. *Aphis humuli*, magnified sketch of do.  
 16. „ *sambuci*, magnified sketch of larva, from the elder.  
 17. „ „ specimens of do.  
 18. „ „ magnified sketch of perfect insect.  
 19. „ „ specimens of do.  
 20. „ „ sketch of elder twig infested by do.  
 21. „ *rubi*, magnified sketch of larva, from the bramble.  
 22. „ „ specimens of do.  
 23. „ „ sketch of perfect insect, magnified.  
 24. „ „ specimens of do.  
 25. „ „ sketch of bramble infested by do.

## CASE XXXV.

HEMIPTERA—HOMOPTERA—*continued.*APHIDEÆ.—(Plant Lice—*continued.*)

1. *Aphis alni*, magnified sketch of larva, from the alder.
2. „ „ specimens of do.
3. „ „ sketch of perfect insect, magnified.
4. „ „ specimens of the perfect insect of do.
5. „ „ specimens of shoots of alder tree with leaves attacked by do., from Eisenach.
6. „ „ sketch of leaves of alder tree defaced by do., from Eisenach.
7. „ *betulæ*, magnified sketch of the larva, from the birch tree.
8. „ „ specimens of do.
9. „ „ magnified sketch of perfect insect of do.
10. „ „ specimens of the perfect insect, from the birch.
11. „ „ sketch of twig and leaves of birch tree attacked by do.
12. „ *antennata*, magnified sketch of larva, from the birch tree.
13. „ „ specimens of do.
14. „ „ magnified sketch of perfect insect.
15. „ „ specimens of do.
16. „ „ sketch of birch twig and leaves attacked by do., from birch.
17. „ (*Lachnus*) *laricis*, magnified sketch of the larva, from the larch.
18. „ „ „ specimens of do.
19. „ „ „ magnified sketch of perfect insect of do.
20. „ „ „ specimens of do.
21. „ „ „ sketch of twig of larch infested by *Aphis laricis*.
22. „ „ *abietis*, magnified sketch of the larva, from the spruce.
23. „ „ „ specimens of do.
24. „ „ „ magnified sketch of perfect insect of do.
25. „ „ „ specimens of do.
26. „ „ „ twig of silver fir infested by *Aphis piceæ*, from Eisenach.

## CASE XXXVI.

HEMIPTERA—HOMOPTERA—*continued.*APHIDEÆ.—(Plant Lice—*continued.*)

- |     |                         |                                |                                                              |
|-----|-------------------------|--------------------------------|--------------------------------------------------------------|
| no. |                         |                                |                                                              |
| 1.  | Aphis (Lachnus) agilis, | magnified sketch of the larva, | from Scotch pine.                                            |
| 2.  | "                       | "                              | specimens of do.                                             |
| 3.  | "                       | "                              | magnified sketch of the perfect insect of do.                |
| 4.  | "                       | "                              | specimens of do.                                             |
| 5.  | "                       | "                              | sketch of pine leaves infested by do.                        |
| 6.  | "                       | "                              | costata, magnified sketch of the larva, from pine tree.      |
| 7.  | "                       | "                              | specimens of do.                                             |
| 8.  | "                       | "                              | magnified sketch of perfect insect of do.                    |
| 9.  | "                       | "                              | specimens of do.                                             |
| 10. | "                       | "                              | sketch of pine twig infested by do.                          |
| 11. | "                       | "                              | pinicola, magnified sketch of the larva, from pine tree.     |
| 12. | "                       | "                              | specimens of do.                                             |
| 13. | "                       | "                              | magnified sketch of perfect insect of do.                    |
| 14. | "                       | "                              | specimens of do.                                             |
| 15. | "                       | "                              | sketch of pine bud infested by do.                           |
| 16. | "                       | "                              | pineti, magnified sketch of the larva, from pine tree.       |
| 17. | "                       | "                              | specimens of do.                                             |
| 18. | "                       | "                              | magnified sketch of perfect insect of do.                    |
| 19. | "                       | "                              | specimens of do.                                             |
| 20. | "                       | "                              | sketch of pine leaves attacked by do.                        |
| 21. | "                       | "                              | pini, magnified sketch of the larva, from the<br>Scotch fir. |
| 22. | "                       | "                              | specimens of do.                                             |
| 23. | "                       | "                              | magnified sketch of perfect insect of do.                    |
| 24. | "                       | "                              | specimens of do.                                             |
| 25. | "                       | "                              | sketch of pine twig infested by do.                          |

## CASE XXXVII.

HEMIPTERA—HOMOPTERA—*continued.*APHIDEÆ.—(Plant Lice—*continued.*)

- |    |                           |                                              |
|----|---------------------------|----------------------------------------------|
| 1. | Aphis (Dryobius) roboris, | sketch of leaves of oak attacked by do.      |
| 2. | "                         | specimens of larva of do., from the oak.     |
| 3. | "                         | magnified sketch of do.                      |
| 4. | "                         | specimens of the perfect insect of do.       |
| 5. | "                         | magnified sketch of do.                      |
| 6. | (Callipterus) quercea,    | sketch of leaves of oak attacked by do.      |
| 7. | "                         | specimens of the larva of do., from the oak. |
| 8. | "                         | magnified sketch of do.                      |

- no.  
 9. Aphis (Callipterus) quercea, specimens of the perfect insect of do.  
 10. " " " magnified sketch of do.  
 11. " " " sketch of oak at Sedbury Park, Chepstow.  
 12. " " " quercus, specimens of the larva, from the oak.  
 13. " " " magnified sketch of do.  
 14. " " " specimens of the perfect insect of do.  
 15. " " " magnified sketch of do.  
 16. " " " juglandis, sketch of twig and leaves of walnut attacked by do.  
 17. " " " specimens of the larva of do., from the walnut.  
 18. " " " magnified sketch of do.  
 19. " " " specimens of perfect insect, with the young hatching, and seen within the body of the mother insect.  
 20. " " " magnified sketch of do.  
 21. " " " tilia, sketch of twigs and leaves of the lime tree attacked by do.  
 22. " " " specimens of the larva of do., from the lime.  
 23. " " " magnified sketch of do.  
 24. " " " specimens of the perfect insect of do.  
 25. " " " magnified sketch of do.

## CASE XXXVIII.

HEMIPTERA—HOMOPTERA—*continued.*

## PSYLLIDÆ—CICADINÆ.

(In progress.)

## CASE XXXIX.

## HEMIPTERA—HETEROPTERA.—(Bugs.)

1. Sehirus bicolor, feeds on herbage, magnified sketch of insect.
2. " " specimen of do.
3. Pentatoma dissimile, feeds on various forest trees, magnified sketch of insect.
4. " " specimen of do.
5. Strachia oleracea, found occasionally on cabbages, when its bad smell renders them useless, magnified sketch of insect.
6. " " specimen of do.
7. " ornata, with similar habits and qualities to the other species of Strachia, magnified sketch of insect.
8. " " specimen of do.

- no.  
 9. *Graphosoma nigrolineata*, from South of Europe, similar in habits to its allied species, magnified sketch of insect.  
 10.     "     "     "     specimen of do.  
 11. *Poecilocaris hardwickii*, injurious to tea plants in India, magnified sketch of insect.  
 12.     "     "     "     specimen of do., immature.  
 13. *Tropicoris rufipes*, feeds on various forest trees, sketch of egg of do., magnified.  
 14.     "     "     "     specimen of do.  
 15.     "     "     "     magnified sketch of early stage of do.  
 16.     "     "     "     specimen of do.  
 17.     "     "     "     magnified sketch of insect.  
 18.     "     "     "     specimen of do.  
 19. *Acanthosoma dentatum*, feeds on the birch, magnified sketch of insect.  
 20.     "     "     "     specimen of do.  
 21. *Syromastes marginatus*, feeds on various plants, magnified sketch of insect.  
 22.     "     "     "     specimen of do.  
 23. *Therapha hyoscyami*, feeds on various plants, magnified sketch of insect.  
 24.     "     "     "     specimen of do.  
 25. *Conorhinus nigrovarius*, the Benchuca, or great black bug of the Pampas, in the immature state, before sucking, from Mendoza, Eastern Andes, magnified sketch of do.  
 26.     "     "     "     specimen of do.  
 27.     "     "     "     magnified sketch of insect.  
 28.     "     "     "     specimen of do., after sucking, immature.  
 29.     "     "     "     magnified sketch of insect.  
 30.     "     "     "     specimens of perfect insect.  
 31. *Harpactor iracundus*, sketch of insect, from the Crimea:  
 32.     "     "     "     specimen of do.  
 33. *Reduvius personatus*, said to feed on the bed bug, but this is very doubtful; magnified sketch of insect.  
 34.     "     "     "     specimen of do., immature state when it covers itself with dust, &c.  
 35.     "     "     "     magnified sketch of do.  
 36.     "     "     "     specimen of perfect insect.  
 37.     "     *amoenus*, magnified sketch of insect from Java, with similar habits to other *Reduvii*.  
 38.     "     "     "     specimen of do.  
 39. *Physorhynchus formidabilis*, n. sp. magnified sketch of insect, from Old Calabar.  
 40.     "     "     "     specimen of do.  
 41. *Coranus subapterus*, magnified sketch of egg, feeds on herbage.  
 42.     "     "     "     specimen of do.  
 43.     "     "     "     magnified sketch of insect.

- NO.  
 44. *Coranus subapterus*, specimen of do.  
 45. *Pyrrhocoris apterus*, feeds on various forest trees, magnified sketch of insect.  
 46. „ „ specimen of do.  
 47. *Acanthia lectularia*, the bed bug, magnified sketch of insect.  
 48. „ „ specimen of do.  
 49. „ *hirundinis*, the bug found on the swallow, magnified sketch of insect.  
 50. „ „ specimen of do.

## CASE XL.

HEMIPTERA—HETEROPTERA.—(Bugs)—*continued*.

1. *Calyptonotus pini*, feeds on pine tree, magnified sketch of insect.
2. „ „ specimen of do. (o).
3. *Phygadicus urticæ*, feeds on various plants, magnified sketch of insect.
4. „ „ specimen of do.
5. *Lopomorphus dolobratu*s, feeds on wheat and corn crops, magnified sketch of do. in young stage.
6. „ „ specimen of do.
7. „ „ sketch of insect.
8. „ „ specimen of do., on wheat crops, grapes, etc.
9. *Deraeocerus striatellus*, feeds on various trees, magnified sketch of insect.
10. „ „ specimen of do.
11. „ *fulvomaculatus*, feeds on black currant bushes, magnified sketch of insect.
12. „ „ specimen of do.
13. *Globiceps flavonotatus*, feeds on the oak, magnified sketch of insect.
14. „ „ specimens of do.
15. *Systellonotus triguttatus*, feeds on mountain sorrel and heather, magnified sketch of insect.
16. „ „ specimen of do.
17. *Apocremnus quercus*, feeds on the oak, magnified sketch of insect.
18. „ „ specimen of do.
19. *Heteromata merioptera*, feeds on nettles and in hedges, magnified sketch of insect.
20. „ „ specimen of do.
21. *Harpocera thoracica*, female, feeds on bushes and herbage, magnified sketch of insect.
22. „ „ specimen of do.
23. *Lygus rubricatus* (*Lygus bipunctatus*, *Curt.*), said by Curtis to injure the potatoe crops, magnified sketch of insect.
24. „ „ specimen of do.

- no.  
 25. *Lygus pabulinus* (*Lygus solani*, *Curt.*), said by Curtis to injure potatoe crops, magnified sketch of insect.  
 26. „ „ specimen of do.  
 27. „ *contaminatus*, said to injure potatoe crops, magnified sketch of insect.  
 28. „ „ specimen of do.  
 29. *Rhopalotomus ater*, feeds on grass and herbage, magnified sketch of insect.  
 30. „ „ specimen of do.  
 31. *Capsus capillaris*, feeds on the bramble, nettle, etc., magnified sketch of insect.  
 32. „ „ specimen of do.  
 33. *Psallus roseus* (*Lygus umbellatarum*, *Curt.*), said to injure potatoe crops, magnified sketch of insect.  
 34. „ „ specimen of do.  
 35. *Zygonotus elegantulus*, magnified sketch of insect, male.  
 36. „ „ specimen of do., on trees.  
 37. „ „ magnified sketch of insect, female.  
 38. „ „ specimen of do., on trees.  
 39. *Lycocoris domesticus*, feeds on wheat and other corn crops, and is found in winter in the refuse of the stalks, magnified sketch of insect.  
 40. „ „ specimen of do.  
 41. *Anthocoris memorum*, young state, found on leaves of trees, but possibly feeds on the larvæ of insects, magnified sketch of insect.  
 42. „ „ specimen of do.  
 43. „ „ magnified sketch of insect, imperfect state.  
 44. „ „ specimen of do.  
 45. „ „ magnified sketch of perfect insect.  
 46. „ „ specimen of do.  
 47. *Triphleps minutus*, common on flowers, magnified, sketch of insect.  
 48. „ „ specimen of do.  
 49. *Nepa cingerea*, very destructive to the larvæ of water insects and spawn of fish, magnified sketch of insect.  
 50. „ „ specimen of do.

## CASE XLI.

## ORTHOPTERA.

THRIPS.—FORFICULÆ (Earwigs); BLATTIDÆ (Cockroaches, &amp;c.)

(In progress.)

## CASE XLII.

ORTHOPTERA—*continued*.

ACHETIDÆ (Crickets).—GRYLLIDÆ (Grasshoppers).

LOCUSTIDÆ (Locusts).

(In progress.)

## CASE XLIII.

## DIPTERA.

TIPULIDÆ.—(Gnats, Mosquitoes, etc.)

- |     |                                  |                                                                                                              |
|-----|----------------------------------|--------------------------------------------------------------------------------------------------------------|
| NO. |                                  |                                                                                                              |
| 1.  | <i>Culex pipiens</i> ,           | sketch of the eggs of the common gnat, much magnified.                                                       |
| 2.  | „ „                              | sketch of eggs of do., laid in boat fashion so as to float on the water, magnified.                          |
| 3.  | „ „                              | sketch of larva of do., magnified.                                                                           |
| 4.  | „ „                              | sketch of pupa, magnified.                                                                                   |
| 5.  | „ „                              | sketch of gnat emerging from pupa case, magnified.                                                           |
| 6.  | „ „                              | sketch of male, perfect insect, magnified.                                                                   |
| 7.  | „ „                              | specimen of do.                                                                                              |
| 8.  | „ „                              | sketch of perfect insect, female, magnified.                                                                 |
| 9.  | „ „                              | specimen of do.                                                                                              |
| 10. | „ „                              | diagram shewing how in the gnat and mosquito the sucking tube bends as the lance pierces deeper and deeper.  |
| 11. | „ <i>altitudinarius</i> , n. sp. | mosquito, from Mount Pichincha, Andes, 13,000 feet in height, magnified sketch of perfect insect.            |
| 12. | „ „                              | specimen of do.                                                                                              |
| 13. | „ <i>insatiabilis</i> ,          | a very virulent mosquito, from Madagascar, magnified sketch of perfect insect.                               |
| 14. | „ <i>annulifer</i>               | do. do.                                                                                                      |
| 15. | <i>Chironomus plumosus</i>       | (does not attack animals), magnified sketch of larva.                                                        |
| 16. | „ „                              | specimen of do., called from its colour the blood worm.                                                      |
| 17. | „ „                              | magnified sketch of pupa.                                                                                    |
| 18. | „ „                              | magnified sketch of perfect insect.                                                                          |
| 19. | „ „                              | specimen of do.                                                                                              |
| 20. | „ <i>nymphææ</i> ,               | found in hothouses in London, feeding on leaves of water lilies in great numbers, magnified sketch of larva. |
| 21. | „ „                              | specimens of larva.                                                                                          |
| 22. | „ „                              | magnified sketch of larva.                                                                                   |

- no.
23. *Chironomus nymphaeæ*, sketch of perfect insect.
24.    "       "       specimens of do.
25.    "       "       leaves of *nymphaeæ* eaten by do.
26.    "       "       sketch of leaf of *nymphaeæ*, shewing way in which  
                                  it is injured by the larva of do.
27. *Tipula oleracea* (daddy longlegs), larva feeds on the roots of herbaceous  
                                  plants, and is often injurious to pastures, is called a  
                                  leather jacket from its toughness, magnified sketch  
                                  of larva.
28.    "       "       specimens of larva.
29.    "       "       magnified sketch of pupa.
30.    "       "       specimens of do.
31.    "       "       magnified sketch of perfect insect.
32.    "       "       specimens of do.
33.    "       *sp.*, found at much manured roots of anemones, magnified sketch  
                                  of larva of do.
34.    "       specimens of do.
35.    "       vignette sketch, illustrating remedy against the leather jackets, viz.  
                                  heavy and frequent rolling.

#### CASE XLIV.

##### DIPTERA—*continued.*

##### CECIDOMYIÆ.—(Species not producing galls)—Wheat Flies, etc.

1. *Cecidomyia tritici*, yellow wheat fly, magnified sketch of eggs.
2.    "       "       specimen of do.
3.    "       "       magnified sketch of grub.
4.    "       "       specimens of do.
5.    "       "       magnified sketch of chrysalis.
6.    "       "       specimens of do.
7.    "       "       magnified sketch of ear of wheat with grubs of wheat  
                                  fly in it.
8.    "       "       magnified sketch of sound plump grain of wheat with  
                                  grub of do. beginning to attack it.
9.    "       "       magnified sketch of grain of wheat shrivelled by having  
                                  been fed on by wheat fly.
10.    "       "       ears of wheat attacked by wheat fly, early stage.
11.    "       "       magnified sketch of insect, male.
12.    "       "       specimen of do.
13.    "       "       magnified sketch of insect, female.
14.    "       "       specimen of do.
15.    "       "       sketch of ears of wheat attacked by wheat fly, late stage,  
                                  one of them picked by birds in search of the grub.



- |     |                                            |                        |                                                                                                                             |
|-----|--------------------------------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| NO. |                                            |                        |                                                                                                                             |
| 16  | <i>Cecidomyia destructor</i> , N. America, | hessian fly,           | magnified sketch of eggs.                                                                                                   |
| 17. | "                                          | "                      | specimen of do.                                                                                                             |
| 18. | "                                          | "                      | magnified sketch of larva (in natural position, with its head downwards).                                                   |
| 19. | "                                          | "                      | specimen of do.                                                                                                             |
| 20. | "                                          | "                      | magnified sketch of cocoon.                                                                                                 |
| 21. | "                                          | "                      | specimen of do.                                                                                                             |
| 22. | "                                          | "                      | magnified sketch of pupa, back view.                                                                                        |
| 23. | "                                          | "                      | specimen of do.                                                                                                             |
| 24. | "                                          | "                      | magnified sketch of pupa, under side.                                                                                       |
| 25. | "                                          | "                      | specimen of do.                                                                                                             |
| 26. | "                                          | "                      | magnified sketch of insect, male.                                                                                           |
| 27. | "                                          | "                      | specimen of do.                                                                                                             |
| 28. | "                                          | "                      | magnified sketch of insect, female.                                                                                         |
| 29. | "                                          | "                      | specimen of do.                                                                                                             |
| 30. | "                                          | "                      | slightly magnified sketch of wheat stalk with grubs descending to the joint to settle.                                      |
| 31. | "                                          | "                      | sketch of wheat stalks with chrysalids attached to the stem.                                                                |
| 32. | "                                          | cerealis, barley fly,  | magnified sketch of larva.                                                                                                  |
| 33. | "                                          | "                      | specimen of do.                                                                                                             |
| 34. | "                                          | "                      | magnified sketch of insect.                                                                                                 |
| 35. | "                                          | "                      | specimen of do.                                                                                                             |
| 36. | <i>Lasiopteryx culmi</i> ,                 | black wheat stalk fly, | magnified sketch of larva.                                                                                                  |
| 37. | "                                          | "                      | specimen of do,                                                                                                             |
| 38. | "                                          | "                      | sketch of chrysalis.                                                                                                        |
| 39. | "                                          | "                      | specimen of do.                                                                                                             |
| 40. | "                                          | "                      | sketch of insect.                                                                                                           |
| 41. | "                                          | "                      | specimens of do.                                                                                                            |
| 42. | "                                          | "                      | illustration, vignette, best mode of prevention against wheat flies, sifting and cleaning the chaff and burning the debris. |

## CASE XLV.

DIPTERA—*continued*.*CECIDOMYLÆ*.—(Species producing galls or distortions.)

- |    |                          |                       |                                                                         |
|----|--------------------------|-----------------------|-------------------------------------------------------------------------|
| 1. | <i>Cecidomyia taxi</i> , | lives in buds of yew, | sketch of yew bud ( <i>Taxus baccata</i> ) discoloured by its presence. |
| 2. | "                        | "                     | specimen of do.                                                         |
| 3. | "                        | "                     | magnified section of yew bud containing larva of do.                    |
| 4. | "                        | "                     | magnified sketch of larva.                                              |
| 5. | "                        | "                     | magnified sketch of perfect insect.                                     |

- |     |                  |                                                                                                      |
|-----|------------------|------------------------------------------------------------------------------------------------------|
| no. |                  |                                                                                                      |
| 6.  | Cecidomyia fagi, | lives on beech leaves, sketch of beech leaves bearing galls produced by do.                          |
| 7.  | " "              | specimen of galls.                                                                                   |
| 8.  | " "              | magnified sketch of gall opened to show larva inside.                                                |
| 9.  | " "              | reaumurii, sketch of leaf of Viburnum lantana covered with spangles produced by do.                  |
| 10. | " "              | leaf of Viburnum lantana covered with spangles.                                                      |
| 11. | " "              | salicis, lives on the willow, sketch of willow twig bearing galls produced by do.                    |
| 12. | " "              | specimens of galls on willow twig.                                                                   |
| 13. | " "              | do.                                                                                                  |
| 14. | " "              | corni, lives on the cornel tree, sketch of the leaf bearing galls produced by do.                    |
| 15. | " "              | specimens of do.                                                                                     |
| 16. | " "              | brachyptera, Germany, sketch of twig of pine tree with leaves injured by larva of do., natural size. |
| 17. | " "              | magnified sketch of two leaves of pine tree injured by do.                                           |
| 18. | " "              | magnified section of base of two leaves shewing the place where the larva of do. lies.               |
| 19. | " "              | magnified sketch of larva of do.                                                                     |
| 20. | " "              | sketch of perfect insect of do.                                                                      |
| 21. | " "              | pini, injurious to pine trees, magnified sketch of larva of do.                                      |
| 22. | " "              | nigra, very injurious to the pear crop, sketch of young pears attacked by larvæ of do.               |
| 23. | " "              | sketch of young pear cut open to shew larvæ of do.                                                   |
| 24. | " "              | magnified models of young pears attacked by do.                                                      |
| 25. | " "              | magnified sketch of larva.                                                                           |
| 26. | " "              | specimen of do.                                                                                      |
| 27. | " "              | magnified sketch of perfect insect, feeds in young fruit of pear tree.                               |

CASE XLVI. I

DIPTERA—*continued.*

CECIDOMYIÆ—(Species producing galls or distortions)—*continued.*

(In course of arrangement.)

CASE XLVII.

DIPTERA—*continued.*

TABANIDÆ (Breeze and Clegg Flies, &c.)

(In progress.)

## CASE XLVIII.

DIPTERA—*continued.*

## MUSCIDÆ—(Blow Flies, etc.)

- NO.
1. *Anthomyia lardaria*, one of the commonest blow flies, magnified sketch of insect.
  2.     "     "     specimen of do.
  3. *Sarcophaga carnaria*, a common blow fly, magnified sketch of do.
  4.     "     "     specimens of do.
  5. *Musca cæsar*, a flesh fly that does great damage to sheep, magnified sketch of do.
  6.     "     "     specimens of do.
  7.     "     "     lock of wool with model of flesh fly larva deposited on it, showing how they are laid in strings.
  8.     "     "     specimen of lock of sheep's wool covered with thousands of newly laid larvæ of flesh fly.
  9.     "     "     specimen of larvæ of flesh fly taken from a sheep's back.
  10.    "     "     larva of do.     "     "     "
  11.    "     *vomitatoria*, the blue bottle fly, very injurious to sheep, and to butchers' meat, magnified sketch of insect.
  12.    "     "     specimens of do.
  13.    "     *meridiana*, magnified sketch of insect.
  14.    "     "     specimens of do.
  15. *Stomoxys calcitrans*, magnified sketch of larva.
  16.    "     "     pupa of do.
  17.    "     "     sketch of insect, a very irritating piercing fly.
  18.    "     "     specimen of do.
  19. *Glossina morsitans*, the tse-tse, very fatal to cattle in East Africa, magnified sketch of insect.
  20.    "     "     specimens of insect, presented by Dr. Quain.
  21. *Ceratitis*, *sp.*, one of the orange flies, specimens of larva of do.
  22.    "     sketch of do., from specimens taken from a Spanish orange.
  23.    "     model of a lemon attacked by do.
  24.    "     sketch of lemon blown by do.
  25.    "     *hispanica*, a fly that occasionally comes to this country in Seville oranges, magnified sketch of insect.
  26.    "     *capitata*, a fly that attacks oranges, magnified sketch of pupa.
  27.    "     "     magnified sketch of insect, male.

## CASE XLIX.

DIPTERA—*continued.*

## ANTHOMYZIDÆ.—(Onion and Cabbage Root Flies, etc.)

- |     |                                                                                                       |          |                                                                                                                                                                                              |
|-----|-------------------------------------------------------------------------------------------------------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| no. |                                                                                                       |          |                                                                                                                                                                                              |
| 1.  | Anthomyia                                                                                             | ceparum, | onion fly, magnified sketch of larva.                                                                                                                                                        |
| 2.  | "                                                                                                     | "        | specimens of do.                                                                                                                                                                             |
| 3.  | "                                                                                                     | "        | sketch of onion plant, showing the eggs of the onion fly laid on the leaves, whence they spark off or fall to the ground, and the young larvæ as soon as hatched enter the bulb at its base. |
| 4.  | "                                                                                                     | "        | sketch of onion, with root laid open to show larvæ at work in the bulb.                                                                                                                      |
| 5.  | "                                                                                                     | "        | dried onion, showing the age and size at which they suffer from larvæ.                                                                                                                       |
| 6.  | "                                                                                                     | "        | magnified sketch of pupa.                                                                                                                                                                    |
| 7.  | "                                                                                                     | "        | specimens of do.                                                                                                                                                                             |
| 8.  | "                                                                                                     | "        | magnified sketch of perfect insect.                                                                                                                                                          |
| 9.  | "                                                                                                     | "        | specimens of do., onion fly, very destructive to onion crops.                                                                                                                                |
| 10. | "                                                                                                     | radicis, | turnip fly, very destructive to turnip crops, cabbages, etc., magnified sketch of larva.                                                                                                     |
| 11. | "                                                                                                     | "        | specimen of do.                                                                                                                                                                              |
| 12. | "                                                                                                     | "        | model of young turnip roots attacked by do.                                                                                                                                                  |
| 13. | "                                                                                                     | "        | model of cabbage root attacked by do.                                                                                                                                                        |
| 14. | "                                                                                                     | "        | do.                                                                                                                                                                                          |
| 15. | "                                                                                                     | "        | sketch of cabbage root attacked by do.                                                                                                                                                       |
| 16. | "                                                                                                     | "        | magnified sketch of pupa.                                                                                                                                                                    |
| 17. | "                                                                                                     | "        | specimens of do.                                                                                                                                                                             |
| 18. | "                                                                                                     | "        | magnified sketch of insect, male.                                                                                                                                                            |
| 19. | "                                                                                                     | "        | specimen of do.                                                                                                                                                                              |
| 20. | "                                                                                                     | "        | magnified sketch of female insect.                                                                                                                                                           |
| 21. | "                                                                                                     | "        | specimen of do.                                                                                                                                                                              |
| 22. | "                                                                                                     | "        | models of cabbage roots with large galls produced by do., or the larvæ of some similar fly.                                                                                                  |
| 23. | Model of woody excrescences on stalk of cabbages, doubtful whether produced by an Anthomyia or not.   |          |                                                                                                                                                                                              |
| 24. | Model of large woody excrescences on cabbage stalk, doubtful whether produced by an Anthomyia or not. |          |                                                                                                                                                                                              |

## CASE L.

DIPTERA—*continued.*

OSCINIDÆ—ORTALIDÆ, &amp;c.

(In preparation.)

## CASE LI.

DIPTERA—*continued.*

PULEX—CESTRIDÆ, &amp;c. (Parasitic Diptera—Fleas and Bots.)

- NO.  
 1. *Pulex irritans*, the common flea, specimens of the larva.  
 2. „ „ enlarged figure of do.  
 3. „ „ pupa, specimens.  
 4. „ „ enlarged figure of do.  
 5. „ „ perfect insect, specimens.  
 6. „ „ enlarged figure of do.  
 7. „ *canis*, *Latr.*, dog-flea, specimens.  
 8. „ „ enlarged figure of do.  
 9. „ „ vignette, dog's head.  
 10. „ *penetrans*, the chigoe of the West Indies and South America, etc.  
 11. „ „ enlarged figure of male.  
 12. „ „ specimens of female in phial.  
 13. „ „ enlarged figure of do.  
 14. „ „ model of toe of negro showing place attacked.  
 15. „ „ sketch of a chigoe tumour in the leg of a small mammal.  
 16. *Melophagus ovinus*, the sheep ked, specimens.  
 17. „ „ enlarged figure of do.  
 18. „ „ vignette, sheep dipping.  
 19. *Hippobosca equina*, the forest fly, from the New Forest, very irritating to horses, specimens of the pupa.  
 20. „ „ enlarged figure of do.  
 21. „ „ perfect insect, specimens.  
 22. „ „ enlarged figure of do.  
 23. „ „ vignette, maddened horses.  
 24. *Ornithomyia avicularia*, specimens, very annoying to fowls.  
 25. „ „ enlarged figure of do.  
 26. „ „ vignette, bullfinch.  
 27. *Cestrus ovis*, the sheep gadfly, larva, specimens from nostrils of sheep.  
 28. „ „ enlarged figure of do.  
 29. „ „ perfect insect, specimen.  
 30. „ „ enlarged figure of do.

- no.  
 31. *Oestrus ovis*, vignette, sheep, suffering from the sturdiness produced by these insects.  
 32. *Hypoderma bovis*, the ox gadfly, larva, specimen.  
 33. „ „ enlarged figure.  
 34. „ „ model of warbles.  
 35. „ „ perfect insect, specimen.  
 36. „ „ enlarged figure.  
 37. „ „ *tarandi*, the reindeer gadfly, perfect insect, specimen.  
 38. „ „ enlarged figure of do.  
 39. „ „ vignette, reindeer.  
 40. *Gastrophilus equi*, the horse bot, specimen of egg.  
 41. „ „ enlarged figure of do.  
 42. „ „ specimen of larva.  
 43. „ „ enlarged figure of do.  
 44. „ „ specimen of perfect insect.  
 45. „ „ enlarged figure of do.  
 46. „ „ *hæmorrhoidalis*, another horse bot, specimen of egg.  
 47. „ „ enlarged figure of do.  
 48. „ „ specimen of larva.  
 49. „ „ specimen of pupa.  
 50. „ „ enlarged figure of larva and pupa.  
 51. „ „ specimen of perfect insect.  
 52. „ „ enlarged figure of do.

## CASE LII.

## HYMENOPTERA.

## APIDÆ.—(Bees.)—The Honey Bee.

1. *Apis mellifica*, section of comb, coloured to show alternation of position of cells on opposite sides, and their slope to prevent honey running out.
2. „ „ magnified sketch of section of a cell, showing the egg as deposited at bottom of it, slightly enlarged.
3. „ „ „ sketch of section of a cell, showing young larva at bottom.
4. „ „ specimens of larvæ.
5. „ „ slightly enlarged sketch of pupa in cell.
6. „ „ specimen of pupa.
7. „ „ specimens of perfect insect (workers).
8. „ „ magnified sketch of do.
9. „ „ magnified sketch of under side of do., showing abdominal scales or holding wax plates.

- no.  
 10. *Apis mellifica*, specimens of do., showing under side without any wax plates present.  
 11. „ „ specimen of do., with wax plates.  
 12. „ „ specimens of drones (males).  
 13. „ „ magnified sketch of do.  
 14. „ „ specimens of Queen bees (females).  
 15. „ „ magnified sketch of do.  
 16. „ „ var. Ligurian bee, specimens of male.  
 17. „ „ magnified sketch of do.  
 18. „ „ specimens of Queen bees.  
 19. „ „ magnified sketch of do.  
 20. „ „ specimen of workers.  
 21. „ „ magnified sketch of do.  
 22. „ „ magnified sketch, showing difference in size and position of eyes of males and females and workers.  
 23. „ „ magnified sketch, showing difference in size and form of mandibles in males and females and workers.  
 24. „ „ magnified sketch, showing difference in the antennæ of the males, females, and workers.  
 25. „ „ magnified sketch of the difference in the hind legs of the males, females, and workers.

## CASE LIII.

HYMENOPTERA.—*continued.*

## Bees and their products.

(Presented by Miss Eleanor Ormerod, Sedbury Park, Chepstow.)

- 1, 2. Drone cells, new and old.  
 3, 4. Drone cells and worker cells, the drone cells the larger, the worker cells the smaller.  
 5, 6. Drone cells, worker cells, and Queen's cell (on the edge).  
 7. Workers' comb.  
 8. Queen's cells on margin of drone cells.  
 9, 10, 11. „ „ worker cells.  
 12. Comb with honey cells, workers' cells, drone cells, and Queen cells.  
 13. Queen's cells placed on pedicels or foot stalks in midst of worker cells.  
 14, 15, 16. Queen's cells on margin of comb.  
 17. Drone cells and worker cells.  
 18. Empty worker comb with commencement of a Queen's cell.  
 19. Worker cells closed in previous to the grubs undergoing their transformation.  
 20. Worker cells with Queen's cell begun.

- no.  
 21. Comb at an early stage, showing the bottom of the cells and Queen's cell commenced.  
 22, 23, 24, 25. Cells for honey.  
 26. Comb filled with honey, and sealed up.  
 27. Comb half empty and half filled, and sealed up.  
 28, 29, 30. Combs filled with honey, and sealed up.  
 29, 30. Section of honey comb that has been filled with honey.  
 31. Comb with cells filled with honey, and sealed up.  
 32. Honey comb with Queen's cell on the margin.  
 33, 34. „ „ filled with honey sealed up, and bee bread.  
 „ „ with bee bread and Queen's cell on the margin.  
 35, 36, 37. „ „ with bee bread.

## CASE LIV.

HYMENOPTERA—*continued.*Bees and their products—*continued.*

(Presented by Miss Eleanor Ormerod, Sedbury Park, Chepstow.)

1. Piece of virgin comb in process of formation.
2. Piece of honey comb ready for filling.
3. „ „ honey comb.
4. Combs showing an enlargement to meet special circumstance of additional space.
5. Comb formed in a curve to suit form of hive.
6. Comb showing how it is accommodated and fastened to the supports.
7. Comb with two openings left as short cuts for the bees to go right and left.
8. Comb with passage through it for a short cut.
9. Combs connected with a solid bridge on which cells are built.
10. Specimens showing edges of comb.
11. Comb of drone and worker cells with a perforation through the middle to serve as a short cut for the bees in passing through the hive.
12. Piece of worker comb with the cells in course of being filled with honey.
13. „ „ with the cells full of honey, and closed.
14. Portion of roof of hive showing how the interior is plastered with propolis.
15. Portion of roof of hive with cocoons and covered ways of *Galleria cereana* on it.
- 16, 17. Combs attacked by *Galleria cereana*.
- 18, 19. Combs attacked by wasps.
20. Specimen showing how combs are attached to the hive. The specimen is placed upside down—the combs hanging from the roof.



NO.

21. Specimen showing how combs are attached to the hive. The specimen is placed lying on its side.
- 22, 23, 24. Specimens to show the appearance of a swarm of bees.
25. „ „ „ how the bees at times hang in what are called curtains.

## CASE LV.

HYMENOPTERA—*continued.*Bees and their products—*continued.*

(In preparation.)

## CASE LVI. (Table Case.)

HYMENOPTERA—*continued.*APIDÆ.—(Collection of Wild Bees' Nests.)—*continued.*

(In course of re-arrangement.)

## CASE LVII.

HYMENOPTERA—*continued.*

VESPIDÆ.—(Wasps.)

(In course of re-arrangement.)

## CASE LVIII.

HYMENOPTERA—*continued.*VESPIDÆ (Wasps)—*continued.*

Presented by Miss Eleanor Ormerod.

1. *Vespa vulgaris*, wasps' cells, closed tops.
2. „ „ black deposit (dung) of the larvæ in their first stage, consolidated at bottom of cells.
3. „ „ section of comb, showing curve of cells.
4. „ „ magnified sketch of do.
5. „ „ comb from nest of *Vespa vulgaris* taken out of nest, turned upside down and replaced. The wasps have built paper huts, screening part of the cells, and papered up the mouths of some of the cells, probably removing the larvæ. Pupæ are in the properly closed cells.

- no.  
 6. *Vespa vulgaris*, piece of comb from a disturbed nest, some of the cells papered up.  
 7. " " beetles (*Carabus violaceus*) eating up larvæ, etc., from a broken nest.  
 8. " crabro, hornet, specimens of male.  
 9. " " " " neuters.  
 10. " " " " females.  
 11. " " female hornet in a cell made in the bark of a tree to pass the winter in. The cell laid open to show the insect.  
 12. *Vespa germanica*, specimens of males.  
 13. " " " " females.  
 14. " *sylvestris* " " females.  
 15. " *vulgaris* " " males.  
 16. " " " " neuters.  
 17. " " " " females.

ILLUSTRATIONS of the life of RHIPIPHORUS PARADOXUS, a beetle parasitic on the wasp.

18. Wasp grub, with larva of the parasite (*Rhipiphorus paradoxus*) in its first stage inside; in nature not visible unless the grub be opened.  
 19. Specimens of wasp grubs of various ages, from a nest infested by the parasite, and thus one or more of them may possibly contain it.  
 20. *Rhipiphorus paradoxus*, enlarged figure in its first larval stage, which it passes in the inside of the wasp grub.  
 21. " " specimen of the first stage of the parasite, presented by Dr. Chapman.  
 22. " " enlarged figure of its second larval stage. It changes its form and comes out of the grub under the throat, and fastens on the outside of the grub, which it sucks to a mere dry skin in four or five days.  
 23. " " specimens of the second larval stage of the parasite.  
 24. " " enlarged figure of second larval stage, nearly full grown, and wasp grub nearly sucked up.  
 25. " " specimen of immature pupæ of *Rhipiphorus paradoxus*.  
 26. " " specimen of mature do.  
 27. " " enlarged figure of the perfect insect, male.  
 28. " " specimen of do., female.  
 29. " " enlarged figure of female.  
 30. " " specimen of do. of ordinary size, bred in workers cells.  
 31. " " specimen of do. of large size, bred in female cell.

## CASE LIX. (Table Case.)

HYMENOPTERA—*continued.*VESPIDÆ.—(Collection of Wasps' and Hornets' Nests.)—*continued.*

(In course of re-arrangement.)

## CASE LX.

HYMENOPTERA—*continued.*

## FORMICIDÆ.—(Ants.)

- NO.  
 1. *Myrmica molesta*, small and now very troublesome in houses in some parts of South of England, London, Brighton, feeds on sugar, &c., specimens of insect.  
 2.   "       "       "       magnified sketch of do.  
 3.   "       *kirbyi*, magnified sketch of insect, from East Indies.  
 4.   "       "       "       sketch of nest of do., made of cow dung.  
 5. *Atta providens*, magnified sketch of insect. An East Indian ant.  
 6. Specimen of ants' paper nest, from Brazil.  
 7. *Formica*, *sp.*, specimens of insect from New Holland, desperate biters and very troublesome.  
 8.   "       "       "       magnified sketch of do.  
 9.   "       *sp.*, the driver ant of West Africa, specimens of do.  
 10.   "       "       "       magnified sketch of do.  
 11.   "       *flava*, the yellow ant, specimens of female.  
 12.   "       "       "       magnified sketch of do.  
 13.   "       "       "       specimens of workers.  
 14.   "       "       "       magnified sketch of do.  
 15.   "       "       "       sketch of nest of do.  
 16.   "       *rufa*, the forest ant, sketch of ant-hill of do.  
 17.   "       "       "       specimens of insect.  
 18.   "       "       "       magnified sketch of do.  
 19.   "       "       "       workers of forest ant clustering on tuft of grass.  
 20.   "       "       "       part of glove left in ants' nest from which the colour has been discharged by the formic acid of the ants.  
 21.   "       "       "       pupæ of do. in débris of nest.  
 22.   "       "       "       specimen of wood bored by do.  
 23.   "       "       "       birch branch riddled by do.  
 24.   "       "       "       specimens of workings in wood by do.  
 25.   "       *fusca*, the brown ant, specimen of under-ground workings of do.  
 26.   "       "       "       specimens of insect, female.  
 27.   "       "       "       do., worker.

- NO.  
 28. *Formica fusca*, magnified sketch of do.  
 29. „ „ tuft of grass with the ants on it.  
 30. „ „ pupæ of do. amongst débris of nest.  
 31. „ „ specimen of working in wood by do.

CASE LXI.

HYMENOPTERA—*continued.*

ICHNEUMONIDÆ AND PTEROMALINI.

(In preparation.)

CASE LXII.

HYMENOPTERA—*continued.*

CYNIPIDÆ.—(Oak Galls.)

1. *Neuroterus malpighii*, specimen of oak leaf bearing oak spangles produced by do., in the young stage.
2. „ „ do., of middle age.
3. „ „ do. do.
4. „ „ do., covered with full grown oak spangles.
5. „ „ sketch of under side of leaf bearing spangles.
6. „ „ sketch of oak spangle.
7. „ „ diagram of a section of an oak spangle, showing the development of its coats.
8. „ „ magnified sketch of dipterous larva found in oak spangle.
9. „ „ *fumipennis*, another oak spangle, specimen of, on oak leaf.
10. „ „ sketch of do.
11. „ „ magnified sketch of gall produced by do.
12. „ „ *reaumurii*, or silk button gall insect, specimens of.
13. „ „ magnified figure of do.
14. „ „ specimens of gall of do.
15. „ „ sketch of do. on under side of oak leaf.
16. „ „ specimen of do., of mature age.
17. „ „ magnified sketch of do.
18. „ „ section of gall.
19. „ „ diagram of section of gall, showing development of coats.
20. „ „ *ostreus*, the oyster gall produced by do.
21. „ „ sketch of galls produced by do.
22. „ „ specimen of oyster gall on oak leaf.
23. „ „ specimen of do. broken open to show inside.

24. *Neuroterus ostreus*, sketch of galls produced by do.  
 25. " " diagram of section of the oyster gall, showing the development of its coats in the early stage.  
 26. " " section of do.  
 27. " " diagram of section of oyster gall, mature stage.

## CASE LXIII.

HYMENOPTERA—*continued*.CYNIPIDÆ.—(Oak Galls.)—*continued*.

1. *Andricus ramuli*, woolly gall, sketch of.  
 2. " " specimen of do. on flower of oak.  
 3. " " specimens of do.  
 4. " " specimens of do., one opened.  
 5. " " specimen of insect.  
 6. " " magnified sketch of do.  
 7. " inflator, sketch of galls produced by do.  
 8. " " specimens of do.  
 9. " " section of do.  
 10. " " sketch of section, magnified.  
 11. " " do.  
 12. " curvator, sketch of galls produced by do.  
 13. " " specimens of do.  
 14. " " do.  
 15. " " sketch of gall cut open.  
 16. " " sketch of gall, leaf form.  
 17. " " model of leaf, with galls.  
 18. " " specimen of leaf and leaf stalk bearing galls.  
 19. " " specimens of inner cell of gall.  
 20. " " magnified sketch of do.  
 21. " " specimen of insect.  
 22. " " magnified sketch of insect.  
 23. " noduli, specimens of oak twigs bearing galls of do.  
 24. " " specimen of oak twig cut open to show gall.  
 25. " " magnified sketch and section of do.  
 26. " quadrilineatus, sketch of gall on male flowers of oak, produced by do.  
 27. " " magnified sketch and section of gall of do.

## CASE LXIV.

HYMENOPTERA—*continued.*CYNIPIDÆ.—(Oak Galls.)—*continued.*

- NO.  
 1. *Dryophantes folii*, model of leaf gall produced by do.  
 2.     "     "     specimen of do.  
 3.     "     "     sketch of do.  
 4.     "     "     specimen cut in two, showing spongy interior.  
 5.     "     "     magnified sketch of section.  
 6.     "     "     diagram of section of do.  
 7.     "     "     specimen of insect.  
 8.     "     "     magnified sketch of do.  
 9.     "     "     specimen of insect.  
 10.    "     "     magnified sketch of insect.  
 11.    "     "     specimen of insect.  
 12.    "     "     sketch of do.  
 13.    "     *longiventris*, sketch of gall.  
 14.    "     "     magnified sketch and section of do.  
 15.    "     *scutellaris*, sketch of gall.  
 16.    "     "     specimen of do.  
 17.    "     "     magnified sketch and section of do.  
 18. *Cynips agama*, pea gall, specimens of oak leaves with galls produced by do.,  
      on under side.  
 19.    "     "     sketch of do.  
 20.    "     "     magnified sketch and section of gall.  
 21. *Dryophantes divisa*, specimens of insect.  
 22.    "     "     magnified sketch of do.  
 23.    "     "     oak leaf, with under side covered with spangles and  
      few galls of do.  
 24.    "     "     sketch of under side of leaf with galls.  
 25.    "     "     magnified sketch and section of gall.  
 26.    "     *agama*, diagram of section of pea gall, showing development  
      of coats.

## CASE LXV.

HYMENOPTERA—*continued.*CYNIPIDÆ.—(Oak Galls.)—*continued.*

1. *Aphilothrix radicis*, oak root gall, model of gall produced by do.  
 2.     "     "     specimens of do.  
 3.     "     "     enlarged sketch of do.  
 4.     "     "     specimens of do., old and dark and not well defined.

- NO.  
5. *Aphilothrix radicis*, sketch of old oak tree, the place where the root galls occur indicated by rooks pecking them.  
6.   "       "       specimens of root gall, showing the way in which the cells are clustered together.  
7.   "       "       sketch of cluster of root galls partially weathered out.  
8.   "       "       magnified sketch of do.  
9.   "       "       specimen of transverse section of oak root gall, old and damaged.  
10.   "       "       magnified sketch of section of a weathered root gall.  
11.   "       "       specimen of vertical section of oak root gall.  
12.   "       "       magnified sketch of do.  
13.   "       "       specimens of larva and perfect insect of do.  
14.   "       "       magnified sketch of larva.  
15.   "       "       magnified sketch of perfect insect.  
16.   "       "       specimens of form of root galls found on the stem instead of the root.  
17.   "       "       specimens of do.  
18.   "       "       do.  
19.   "       "       do.  
20.   "       "       sketch of oak tree, the part of the stem in which the bark form of the root gall occurs is below the branches.  
21.   "       *corticalis*, specimens of gall produced by do.  
22.   "       "       sketch of do.  
23.   "       "       sketch of magnified section of gall of do.  
24.   "       "       magnified sketch of larva.  
25.   "       "       magnified sketch of perfect insect.

## CASE LXVI.

HYMENOPTERA—*continued.*CYNIPIDÆ.—(Oak Galls.)—*continued.*

1. *Aphilothrix gemmæ*, artichoke gall, specimens of galls produced by do.  
2.   "       "       sketch of do.  
3.   "       "       specimens of do. growing beside marble gall.  
4.   "       "       specimens of do. laid open to show the inner gall.  
5.   "       "       sketch of do. cut open to show the inner gall.  
6.   "       *albo-punctatus*, sketch of galls of do. on buds of oak, natural size.  
7.   "       "       specimens of do. on buds of the oak.  
8.   "       "       magnified sketch of gall produced by do.  
9.   "       *callidoma*, sketch of gall produced by do.  
10.   "       "       magnified sketch of gall produced by do.

- |     |                  |                                                                                              |
|-----|------------------|----------------------------------------------------------------------------------------------|
| no. |                  |                                                                                              |
| 11. | Biorhiza aptera, | sketch of galls produced by do. on oak roots, bumpy rough form.                              |
| 12. | „ „              | sketch of do.                                                                                |
| 13. | „ „              | specimens of do. on the root fibres of the oak.                                              |
| 14. | „ „              | specimens of larvæ of do. (1).                                                               |
| 15. | „ „              | specimens of perfect insect of do.                                                           |
| 16. | „ „              | magnified sketch of do.                                                                      |
| 17. | „ „              | rough form of gall of do. cut open to show cells, specimen.                                  |
| 18. | „ „              | magnified sketch of do. cut open.                                                            |
| 19. | „ „              | magnified sketch of two celled gall of do. cut open, rough form.                             |
| 20. | „ „              | specimens of smooth form of galls produced on oak roots.                                     |
| 21. | „ „              | magnified sketch of section of do.                                                           |
| 22. | „ „              | sketch of oak tree uprooted, shewing the place where the galls of the Biorhiza aptera occur. |
| 23. | „ renum,         | sketch of leaves, with the galls of do. on under side, both young and old.                   |
| 24. | „ „              | magnified sketch of young gall of do.                                                        |
| 25. | „ „              | immature gall of do. dried.                                                                  |
| 26. | „ „              | magnified sketch of do.                                                                      |
| 27. | „ „              | magnified sketch of mature gall of do., ready to fall off.                                   |

CASE LXVII.

HYMENOPTERA—*continued.*

CYNIPIDÆ.—(Oak Galls.)—*continued.*

- |     |                        |                                                                         |
|-----|------------------------|-------------------------------------------------------------------------|
| 1.  | Teras terminalis,      | oak apple, or King Charles' apple, specimen of oak gall produced by do. |
| 2.  | „ „                    | do. in its early stages.                                                |
| 3.  | „ „                    | large full grown do.                                                    |
| 4.  | „ „                    | model of oak apple.                                                     |
| 5.  | „ „                    | plaster model of do.                                                    |
| 6.  | „ „                    | sketch of rosy-cheeked oak apple produced by do.                        |
| 7.  | „ „                    | specimen of oak apple.                                                  |
| 8.  | „ „                    | magnified sketch of section of do.                                      |
| 9.  | „ „                    | core of do., weathered out.                                             |
| 10. | „ „                    | specimens of larva and perfect insect.                                  |
| 11. | „ „                    | magnified sketch of larva.                                              |
| 12. | „ „                    | specimens of perfect insect.                                            |
| 13. | „ „                    | magnified sketch of do.                                                 |
| 14. | Spathogaster baccarum, | sketch of currant galls produced on oak flowers by do.                  |
| 15. | „ „                    | sketch of do.                                                           |



- no.  
 16. *Spathogaster baccharum*, model of currant gall on leaf.  
 17. " " specimens of larvæ pupæ and perfect insects.  
 18. " " specimens of perfect insect.  
 19. " " magnified sketch of do.  
 20. " " magnified sketch and section of currant gall.  
 21. " tricolor, sketch of galls produced by do.  
 22. " " magnified sketch and section of do.  
 23. *Synergus albipes*, an inquiline or guest-inhabitant of do., specimen of insect.  
 24. " " magnified sketch of do.  
 25. *Trigonaspis megaptera*, model of gall produced by do.  
 26. " " magnified sketch of do.  
 27. " " magnified sketch and section of do.  
 28. " " specimen of perfect insect.  
 29. " " specimens of larva and perfect insect.  
 30. " " magnified sketch of perfect insect.

## CASE LXVIII.

HYMENOPTERA—*continued.*CYNIPIDÆ.—(Oak Galls.)—*continued.*

1. *Cynips kollari*, marble or bullet galls produced by do.  
 2. " " do.  
 3. " " do.  
 4. " " cluster of do.  
 5. " " sketch of do.  
 6. " " specimens of gall cut in two to show the single cell both in single and double galls.  
 7. " " magnified sketch of section of gall.  
 8. " " specimens of larva.  
 9. " " specimens of perfect insect.  
 10. " " magnified sketch of larva.  
 11. " " magnified sketch of perfect insect.  
 12. " " specimens of small marble galls inhabited by inquilines.  
 13. " " do. do. opened.  
 14. " " magnified sketch of section of do.  
 15. *Synergus facialis*, an inquiline or guest-inhabitant of do., specimens of insect.  
 16. " " magnified sketch of do.  
 17. " " specimen of marble galls pecked open by titmice or other birds.  
 18. *Decatoma biguttata*, an ichneumonidous parasite of do, specimens of insect.  
 19. " " magnified sketch of do.

- no.  
 20. *Decatoma biguttata*, magnified sketch of section of leaf bud, in which an egg of *Cynips kollari* has been laid.  
 21. *Cynips* (n. sp.?), sketch of gall.  
 22. *Aphilothrix autumnalis*, magnified sketch of gall.  
 23. *Cynips ferruginea*, sketch of gall produced by do.  
 24. „ *vesicatrix*, specimens of galls.  
 25. „ „ sketch of do.  
 26. „ „ magnified sketch and section of do.

## CASE LXIX.

HYMENOPTERA—*continued.*CYNIPIDÆ.—(Oak Galls.)—*continued.*

1. *Cynips tinctoria*, the ink gall of commerce, from the Levant, produced by do.
2. „ „ „ specimens of do.
3. „ „ „ full grown specimens of do.
4. „ „ „ magnified sketch and section of do.
5. „ „ „ specimens of insect.
6. „ „ „ magnified sketch of do.
7. „ *insana*, dead sea apple from Syria, produced by do., sketch of do.
8. „ „ „ specimens of do.
9. „ „ „ magnified sketch and section of do.
10. „ „ „ specimens of insect.
11. „ „ „ sketch of do.
12. „ *sp.*, ink galls produced by do., which come mixed with galls of *Cynips tinctoria* from the Levant, species not known, specimens.
13. „ „ magnified sketch and section of do.
14. „ *argentea*, Austria, sketch of gall of do.
15. „ „ „ magnified sketch and section of do.
16. „ „ *tojæ*, South Europe, sketch of gall produced by do.
17. „ „ *calycis*, the tazza gall, Austria, Hungary, &c., sketch of do.
18. „ „ „ specimens of do.
19. „ „ „ magnified sketch of do.
20. „ „ „ magnified section of do.
21. „ „ „ specimens of gall produced by do.
22. „ „ „ magnified sketch and section of do.
23. „ „ *hungarica*, from Hungary, sketch of gall produced by do.
24. „ „ „ magnified sketch and section of do.

## CASE LXX.

HYMENOPTERA—*continued.*CYNIPIDÆ.—(Oak Galls, &c.)—*continued.*

- NO.  
 1. *Aphilothrix collaris*, sketch of two forms of galls in oak buds, produced by do., found on the continent, and probably also in England.  
 2. „ „ globuli, slightly enlarged sketch of galls, produced in oak buds by do., not yet recorded as found in Britain.  
 3. „ „ exclusa, sketch of galls in oak buds, produced by do., found on the continent, not yet recorded as British.  
 4. „ „ solitaria (*A. ferruginea*, Hart.), sketch of gall in oak buds produced by do.  
 5. „ „ „ specimens of galls caused by do.  
 6. „ „ autumnalis, oak bud gall, possibly caused by do.  
 7. „ „ „ magnified sketch of do.  
 8. „ „ rhizomæ, sketch of galls produced on oak twigs by do., found on the continent, not recorded from Britain.  
 9. *Dryophantes disticha*, sketch of leaf galls produced by do., found on the continent, not yet observed in Britain.  
 10. „ „ „ sketch of section of gall produced by do.  
 11. *Cynips serotina*, sketch of galls on buds of *Quercus sessiliflora*, and *Quercus pubescens* produced by do.  
 12. „ „ umbraculus, sketch of galls produced by do. in Italy and S. Europe.  
 13. „ „ truncicola, much enlarged sketch of galls on oak, produced by do., found in Austria, not British.  
 14. „ „ conifica, do., do. do.  
 15. „ „ hartigi, do. do. do.  
 16. „ „ „ section of do.  
 17. „ „ balaniformis (*Curt.*), sketch of galls produced by do., probably a variety of *Cynips hartigi*.  
 18. „ „ cerricola, sketch of galls produced by do. on *Quercus cerris*, in Austria, etc.  
 19. *Dryocosmus macroptera*, do., Austria.  
 20. „ „ „ magnified sketch and section of gall produced by do.  
 21. „ „ cerriphilus, sketch of galls produced by do. on *Quercus cerris*, South of Europe.

## Rose Galls.

22. *Rhodites echinus*, *n. sp.*, specimen of gall produced by do. on wild rose in Utah.  
 23. „ „ „ sketch of do.

- NO.  
 24. *Rhodites occidentalis*, *n. sp.*, sketch of gall produced by do. on wild rose in Utah.  
 25. „ „ specimen of do.  
 26. „ *bicolor*, sketch of twig of wild rose bearing gall produced by do., California.  
 27. „ „ specimen of do.  
 28. „ *rosæ* (*Bedeguar* of the rose), sketch of galls produced by do.  
 29. „ „ specimens of do. and gall produced by do. on the rose.

## CASE LXXI.

HYMENOPTERA—*continued*.CYNIPIDÆ.—(North American Oak Galls.)—*continued*.

1. *Cynips*, *sp.*, that produces artichoke oak gall on burr oak, from Utah, sketch of gall.
2. „ specimens of do.
3. „ *rossifer*, rosy woolly gall produced on oak twigs by do., from Guatemala, sketch of gall.
4. „ „ specimen of do.
5. „ *seminator*, woolly gall from white oak, produced by do., N. America, sketch of gall.
6. „ *quercus-frondosa*, the leafy oak gall produced by do., from the white oak, Illinois, Mississippi, sketch of gall.
7. „ *prunus*, oak plum gall produced by do. on black and red oak, N. America.
8. „ „ sketch of gall magnified.
9. „ „ sketch of perfect insect magnified.
10. „ *spongifica*, sketch of oak apple produced by do. on the black oak N. America.
11. „ *sp.*, specimen of gall, from California, allied to preceding.
12. „ *inanis*, sketch of oak gall produced by do. on red oak, N. America.
13. „ *sp.*, that produces cluster galls on twigs of burr oak, Utah, specimens.
14. „ „ sketch of do.
15. „ *sp.*, that produces crowded gall from burr oak, Utah, sketch of gall.
16. „ „ specimens of do.
17. „ „ specimens of perfect insect from do.
18. „ „ sketch of do. magnified.
19. „ „ specimen of chalcidoid parasite from oak gall on burr oak, Utah.
20. „ „ sketch of do. magnified.
21. „ *sp.*, that produces stalk gall on burr oak, Utah, sketch of gall.
22. „ „ specimen of do.

- NO.  
 23. *Cynips inanis*, *sp.*, woody oak gall produced by do., from Utah, sketch of do.  
 24. " " specimen of do.  
 25. " " specimen of perfect insect magnified.  
 26. " " sketch of do.

## CASE LXXII.

HYMENOPTERA—*continued.*

TENTHREDINIDÆ.—(Sawflies.)

(In progress.)

## CASE LXXIII.

HYMENOPTERA—*continued.*TENTHREDINIDÆ.—Saw Flies—*continued.* (Species injurious to Rose Trees.)

1. *Hylotoma rosarum*, sketch showing how the eggs of do. are placed under the epidermis of under side of twigs.
2. " " specimen of caterpillar.
3. " " sketch of do. magnified.
4. " " cocoon of do.
5. " " sketch of do. magnified.
6. " " specimens of perfect insect, female.
7. " " sketch of do. magnified.
8. " " specimen, showing the injury done to rose leaves by the larva of do.
9. " " sketch of do.
10. *Athalia rosæ*, specimen of caterpillar.
11. " " sketch of do. magnified.
12. " " sketch, showing the nature of the injury done to rose leaves by the larva of do.
13. " " specimen of do.
14. " " do.
15. *Tenthredo zonæ*, specimen of larva.
16. " " sketch of do. magnified.
17. " " specimen of perfect insect.
18. " " sketch of do. magnified.
19. *Cladius difformis*, specimen of larva.
20. " " sketch of do. magnified.
21. " " sketch, showing the nature of the injury done to rose leaves by the larva of do.
22. " " specimen of do.

- NO.  
 23. *Emphytus cinctus*, specimen of larva.  
 24. „ „ sketch of do. magnified.  
 25. „ „ specimen of pupa of do.  
 26. „ „ sketch of do. magnified.  
 27. „ „ sketch, showing larva of do. feeding inside the rose stem.  
 28. „ „ rose twigs cut open to show the work of the larva.  
 29. „ „ specimen of insect, male (without the white band).  
 30. „ „ sketch of do. magnified.  
 31. „ „ specimen of do., female (with white band).  
 32. „ „ sketch of do. magnified.  
 33. *Ichneumon*, *sp.*, parasite of do., specimen of insect.  
 34. „ „ sketch of do.  
 35. *Selandria æthiops*, sketch of rose leaves, showing nature of mischief done by the larva of do.

CASE LXXIV.

HYMENOPTERA—*continued.*

TENTHREDINIDÆ.—(Sawflies)—*continued.*

(In progress.)

CASE LXXV.

HYMENOPTERA—*continued.*

SIRICIDÆ.—(All very injurious to timber, feeding in the heart of fresh wood.)

1. *Sirex juvencus*, sketch of larva magnified.
2. „ „ specimen of do. in a piece of Baltic batten from Dundee.
3. „ „ sketch of male from a Baltic batten, Dundee, magnified.
4. „ „ specimen of do.
5. „ „ sketch of female, from a Baltic batten, Dundee, magnified.
6. „ „ specimens.
7. „ *gigas*, specimens of larva from larch log in Wales.
8. „ „ sketch of do. magnified.
9. „ „ sketch of male magnified.
10. „ „ specimens of do. from Chepstow.
11. „ „ sketch of female magnified.
12. „ „ specimens of do.
13. „ „ sketch of borings of do., showing gradual increase in diameter as the larva grows larger.
14. „ „ specimen of borings of larva of do. in larch.
15. „ *phasma* (spectrum), Europe, sketch of female, magnified.

- NO.  
 16. *Sirex phasma* (spectrum), specimens of do.  
 17. „ *flavescens*, from North America, sketch of, magnified.  
 18. „ „ specimens of do.  
 19. „ *albicornis*, North America, sketch of, magnified.  
 20. „ „ specimen of do.  
 21. *Xiphidria fasciata*, Europe, sketch of, magnified.  
 22. „ „ „ specimen of do.

## CASE LXXVI.

## NEUROPTERA.

TERMITIDÆ.—(White Ants.)

(In preparation.)

## CASE LXXVII.

NEUROPTERA—*continued*.

PERLIDÆ, EPHEMERIDÆ, LIBELLULIDÆ.—(Lace Wings,

May Flies, Dragon Flies.)

(In preparation.)

## CASE LXXVIII.

## LEPIDOPTERA.

RHOPALOCERA.—(Butterflies.)

1. *Papilio machaon*, feeds on carrot plants, &c., sketch of caterpillar of do., magnified.
2. „ „ specimens of caterpillars of do.
3. „ „ sketch of chrysalis of do., magnified.
4. „ „ specimens of chrysalids of do.
5. „ „ sketch of perfect insect, magnified.
6. „ „ specimens of do.
7. *Gonepteryx rhamni*, feeds on species of *Rhamnus*, sketch of caterpillar of do., magnified.
8. „ „ specimen of do.
9. „ „ sketch of chrysalis of do., magnified.
10. „ „ specimen of do.
11. „ „ sketch of perfect butterfly, magnified.
12. „ „ specimens of do., male.
13. „ „ specimens of do., female.

- no.
14. *Colias edusa*, feeds on clover and lucerne, sketch of caterpillar of do., magnified.
15. " " specimens of do.
16. " " magnified sketch of male butterfly.
17. " " specimens of do.
18. " " magnified sketch of female butterfly.
19. " " specimens of do.
20. " *hyale*, feeds on lucerne, &c., sketch of caterpillar of do., magnified.
21. " " specimens of do.
22. " " magnified sketch of do.
23. " " specimens of do., male and female.
24. " *philodice*, the commonest yellow butterfly in the United States, magnified sketch of do.
25. " " specimens of do.
26. *Aporeia crataegi*, feeds on the hawthorn, sketch of caterpillar of do., magnified.
27. " " specimens of do.
28. " " magnified sketch of butterfly.
29. " " specimens of do.
30. *Pieris protodice*, the cabbage white butterfly of North America, magnified sketch of.
31. " " specimens of do.

CASE LXXIX.

LEPIDOPTERA—*continued.*

RHOPALOCERA.—(Butterflies.)—*continued.*

Cabbage Whites.

1. *Pieris brassicae*, the large cabbage white butterfly, sketch of cluster of eggs of do. deposited on the under side of a leaf.
2. " " specimens of do.
3. " " magnified sketch of egg.
4. " " magnified sketch of caterpillar.
5. " " specimens of caterpillars.
6. " " model of cabbage leaf injured by caterpillar of do.
7. " " specimens of chrysalis.
8. " " magnified sketch of do.
9. " " magnified sketch of male butterfly.
10. " " specimen of do.
11. " " magnified sketch of female.
12. " " specimen of do.
13. " " magnified sketch of under side of do.



- no.  
 14. *Microgaster glomeratus*, a chalciditous parasite, that feeds on the inside of the caterpillar of *Pieris brassicæ*, sketch of insect, magnified.  
 15. " " specimens of insect and cocoons.  
 16. *Pteromalus puparum*, a chalciditous parasite, that feeds on the inside of the pupæ of the cabbage butterflies, sketch of insect, magnified.  
 17. " " specimens of chrysalids of cabbage butterfly attacked, and of larvæ, and perfect insect of do.  
 18. *Pieris rapæ*, the small white cabbage butterfly, magnified sketch of egg of do.  
 19. " " magnified sketch of caterpillar.  
 20. " " model of cauliflower with eggs laid below the flower.  
 21. " " magnified sketch of chrysalis.  
 22. " " specimens of do.  
 23. " " magnified sketch of female butterfly.  
 24. " " specimens of male do.  
 25. " " " female.  
 26. " " " showing under side of male insect.  
 27. " " " " " female.  
 28. " " magnified sketch of under side of female.  
 29. " *napi*, green veined cabbage white butterfly, magnified sketch of egg of.  
 30. " " magnified sketch of caterpillar.  
 31. " " specimens of chrysalis.  
 32. " " magnified sketch of male insect.  
 33. " " specimens of male, female, and showing under side of female.  
 34. " " magnified sketch of under side of male.

## CASE LXXX.

LEPIDOPTERA—*continued*.RHOPALOCERA.—(Butterflies.)—*continued*.*Vanessa*.

1. *Vanessa urticæ*, the small tortoise-shell butterfly, the larva feeds on nettle, sketch of caterpillar, magnified.  
 2. " " specimens of do.  
 3. " " sketch of chrysalis of do., magnified.  
 4. " " specimens of do.  
 5. " " sketch of do.  
 6. " " specimens of do.  
 7. " *polychloros*, the large tortoise-shell butterfly, larva feeds on the elm, sketch of the larva of do., magnified.

- no. 8. *Vanessa polychloros*, specimens of do.
9. " " sketch of chrysalis of do., magnified.
10. " " specimens of do.
11. " " sketch of do.
12. " " specimens of do.
13. " io, the peacock butterfly, feeds on nettle, sketch of caterpillar of do., magnified.
14. " " specimens of young larva of do.
15. " " specimens of full-grown caterpillar of do.
16. " " sketch of chrysalis of do., magnified.
17. " " sketch of butterfly, magnified.
18. " " specimens of do.
19. *Pyrameis atalanta*, the red admiral butterfly, feeds on nettle, sketch of larva of do., magnified.
20. " " specimens of do.
21. " " sketch of chrysalis of do., magnified.
22. " " specimens of do.
23. " " sketch of this butterfly, magnified.
24. " " specimens of do.
25. " *cardui*, the painted lady, feeds on thistles, sketch of caterpillar of do., magnified.
26. " " specimens of do.
27. " " sketch of chrysalis of do., magnified.
28. " " specimens of do.
29. " " sketch of butterfly, magnified.
30. " " specimens of do.

CASE LXXXI.

LEPIDOPTERA—*continued.*

SPHINGES.

(In progress.)

CASE LXXXII.

LEPIDOPTERA—*continued.*

SPHINGES.—*continued.*

(In progress.)

## CASE LXXXIII.

LEPIDOPTERA—*continued.*

## SESIADÆ.—(Clear-wing Moths.)

(In progress.)

## CASE LXXXIV.

LEPIDOPTERA—*continued.*

## BOMBYCES—LITHOSIDÆ and ARCTIIDÆ.—(Tiger Moths.)

(In progress.)

## CASE LXXXV.

LEPIDOPTERA—*continued.*BOMBYCES—ARCTIIDÆ.—(Tiger Moths.)—*continued.*

- |     |                     |                                                                                                           |
|-----|---------------------|-----------------------------------------------------------------------------------------------------------|
| no. |                     |                                                                                                           |
| 1.  | Nemeophila russula, | the clouded-buff moth, feeds on dandelion and similar plants, magnified sketch of pupa.                   |
| 2.  | „                   | „ specimen of do.                                                                                         |
| 3.  | „                   | „ specimens of male moth.                                                                                 |
| 4.  | „                   | „ magnified sketch of do.                                                                                 |
| 5.  | „                   | „ specimens of female moth.                                                                               |
| 6.  | „                   | „ magnified sketch of do.                                                                                 |
| 7.  | „                   | plantaginis, the wood tiger moth, feeds on the violet and plantain, &c., magnified sketch of female moth. |
| 8.  | „                   | „ specimens of moth.                                                                                      |
| 9.  | Chelonia villica,   | the cream-spot tiger moth, feeds on chickweed, magnified sketch of larva.                                 |
| 10. | „                   | „ specimens of do.                                                                                        |
| 11. | „                   | „ magnified sketch of moth.                                                                               |
| 12. | „                   | „ specimens of do.                                                                                        |
| 13. | „                   | caja, the common tiger moth, feeds on nettles and other herbaceous plants, specimens of young larvæ.      |
| 14. | „                   | „ magnified sketch of full grown larva.                                                                   |
| 15. | „                   | „ specimens of do.                                                                                        |
| 16. | „                   | „ specimen of cocoon.                                                                                     |
| 17. | „                   | „ specimen of pupa.                                                                                       |
| 18. | „                   | „ magnified sketch of do.                                                                                 |
| 19. | „                   | „ magnified sketch of moth, ordinary variety                                                              |

- NO.  
 20. *Chelonia caja*, specimens of do.  
 21. „ „ magnified sketch of pale variety.  
 22. „ „ specimen of do.  
 23. „ „ specimens of dark variety.  
 24. „ „ magnified sketch of black variety of do.

CASE LXXXVI.

LEPIDOPTERA—*continued.*

BOMBYCES—ARCTIIDÆ.—*continued.*

1. *Arctia fuliginosa*, the ruby tiger moth, feeds on herbaceous plants, magnified sketch of larva.  
 2. „ „ specimens of do.  
 3. „ „ magnified sketch of pupa.  
 4. „ „ specimens of do.  
 5. „ „ magnified sketch of moth.  
 6. „ „ specimens of do.  
 7. „ *mendica*, the muslin moth, feeds on herbaceous plants, magnified sketch of male moth.  
 8. „ „ specimens of do.  
 9. „ „ magnified sketch of female.  
 10. „ „ specimens of do.  
 11. „ *menthastri*, the white ermine moth, a general feeder, magnified sketch of larva.  
 12. „ „ specimen of do.  
 13. „ „ magnified sketch of pupa.  
 14. „ „ specimen of do.  
 15. „ „ magnified sketch of moth.  
 16. „ „ specimens of do.  
 17. „ *lubricipeda*, the buff ermine moth, feeds on dock, etc., magnified sketch of larva.  
 18. „ „ specimens of do.  
 19. „ „ magnified sketch of pupa.  
 20. „ „ specimen of do.  
 21. „ „ magnified sketch of moth.  
 22. „ „ specimens of do.  
 23. „ *urticæ*, the water ermine moth, feeds on most plants, magnified sketch of larva.  
 24. „ „ specimens of do.  
 25. „ „ magnified sketch of pupa.  
 26. „ „ specimen of do.  
 27. „ „ magnified sketch of moth.  
 28. „ „ specimens of do.

## CASE LXXXVII.

LEPIDOPTERA—*continued.*BOMBYCES.—*continued.* HEPIALIDÆ—PSYCHIDÆ..

(In progress.)

## CASE LXXXVIII.

LEPIDOPTERA—*continued.*BOMBYCES—*continued.* COSSIDÆ.

1. *Zeuzera æsculi*, leopard moth, very injurious to fruit and other trees, common near London, eggs of do.
2. „ „ sketch of do. magnified.
3. „ „ specimens of caterpillar.
4. „ „ droppings of caterpillar.
5. „ „ magnified sketch of caterpillar in its burrow.
6. „ „ specimen of do. boring in pear tree.
7. „ „ nest of caterpillar of do. made of debris of bored wood, in which it passes its first winter.
8. „ „ another example.
9. „ „ caterpillar disturbed in its winter nest.
10. „ „ nearly mature caterpillar in its burrow.
11. „ „ do. in its burrow, mature and nearly ready to change into the chrysalis.
12. „ „ specimens of chrysalis.
13. „ „ magnified sketch of chrysalis.
14. „ „ sketch showing the remains of the chrysalis projecting from hole in tree after the moth has come out.
15. „ „ specimens of leopard moth, upper row males, lower row females.
16. „ „ magnified sketch of leopard moth.
17. „ „ borings of larva in young twigs, scarcely large enough to contain it.
18. „ „ boring of larva in thorn tree.
19. „ „ boring of larva in poplar.
20. „ „ part of young plane tree bored, the damaged part shows where the moth has come out.
21. „ „ plane tree damaged by old boring of larva, terminating in flat gnawing, subsequently laid bare by decay of bark, which has begun to heal.
22. „ „ branch of plane tree split open to show boring of larva, internal and external termination.

- no.  
23. *Zeuzera æsculi*, boring of larva in pear tree.  
24. , , boring of larva in elm tree.

CASE LXXXIX.

LEPIDOPTERA—*continued.*

BOMBYCES—COSSIDÆ.—*continued.*

1. *Zeuzera æsculi*, *continued*, boring of larva in small twig of poplar.
2. " " boring of larva going from stem up twig of pear tree.
3. " " boring of larva in pear tree.
4. " " boring of larva in branch of elm tree.
5. " " another example.
6. " " borings of larvæ (two alongside) in branch of apple tree.
7. " " boring of larva in branch of pear tree.
8. " " boring of larva in branch and bark of elm tree.
9. " " boring of larva in plane tree.
10. " " boring of larva in plane tree next the bark.
11. " " another example.
12. *Cossus ligniperda*, the goat moth, specimens of its eggs.
13. " " magnified sketch of do.
14. " " caterpillars of do. first year, from one day hatched.
15. " " cast skins of caterpillars.
16. " " specimens of caterpillars, second year.
17. " " " caterpillars, third (last) year, ready to change.
18. " " " caterpillars in borings in willow.
19. " " " another example.
20. " " " caterpillars in borings in poplar, from Botanic Gardens, Berlin.

CASE XC.

LEPIDOPTERA—*continued.*

BOMBYCES—COSSIDÆ.—*continued.*

1. *Cossus ligniperda*, *continued*, winter quarters of caterpillars.
2. " " specimens of cocoons.
3. " " " cocoons with chrysalids in them, one laid open, the other with top of cocoon removed.
4. " " " cocoon laid open (chrysalis removed).
5. " " " chrysalids.
6. " " " magnified sketch of chrysalis of goat moth.

- |     |                    |                                                                                                                                                         |
|-----|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| NO. |                    |                                                                                                                                                         |
| 7.  | Cossus ligniperda, | specimens of moth, male and female.                                                                                                                     |
| 8.  | " "                | magnified sketch of moth.                                                                                                                               |
| 9.  | " "                | specimen showing how the chrysalis of the goat moth is worked out of the bark by the insect, and with the perfect insect lately come out sitting above. |
| 10. | " "                | indications of presence of goat moth in the tree, debris about the mouth of the boring.                                                                 |
| 11. | " "                | borings of larva in elm.                                                                                                                                |
| 12. | " "                | do. in willow.                                                                                                                                          |
| 13. | " "                | do. do.                                                                                                                                                 |
| 14. | " "                | do. do.                                                                                                                                                 |
| 15. | " "                | do. in poplar.                                                                                                                                          |

## CASE XCI.

LEPIDOPTERA—*continued.*BOMBYCES—*continued.* LIPARIDÆ.

- |     |                      |                                                                                                                        |
|-----|----------------------|------------------------------------------------------------------------------------------------------------------------|
| 1.  | Liparis chrysorrhœa, | the brown-tailed moth, feeds on hawthorn, etc., roll of eggs on oak leaf covered by hair from tail of mother.          |
| 2.  | " "                  | magnified sketch of larva.                                                                                             |
| 3.  | " "                  | specimen of larva.                                                                                                     |
| 4.  | " "                  | sketch of winter nest or web of larvæ.                                                                                 |
| 5.  | " "                  | specimen of perfect insect.                                                                                            |
| 6.  | " "                  | magnified sketch of do.                                                                                                |
| 7.  | " auriflua,          | the yellow-tailed moth, feeds on rose trees, etc., roll of eggs on plum tree leaf covered with down from tail of moth. |
| 8.  | " "                  | magnified sketch of larva.                                                                                             |
| 9.  | " "                  | specimens of do.                                                                                                       |
| 10. | " "                  | magnified sketch of chrysalis.                                                                                         |
| 11. | " "                  | specimens of perfect insect.                                                                                           |
| 12. | " "                  | magnified sketch of do.                                                                                                |
| 13. | " salicis,           | injures the willow and poplar, magnified sketch of patch of eggs covered with envelope-like hardened saliva.           |
| 14. | " "                  | specimen of eggs.                                                                                                      |
| 15. | " "                  | magnified sketch of larva.                                                                                             |
| 16. | " "                  | specimens of do.                                                                                                       |
| 17. | " "                  | web containing two chrysalids.                                                                                         |
| 18. | " "                  | specimen of chrysalis.                                                                                                 |
| 19. | " "                  | magnified sketch of chrysalis.                                                                                         |
| 20. | " "                  | magnified sketch of moth.                                                                                              |
| 21. | " "                  | specimen of moth.                                                                                                      |

- |     |                          |                                                                                                                              |  |
|-----|--------------------------|------------------------------------------------------------------------------------------------------------------------------|--|
| no. |                          |                                                                                                                              |  |
| 22. | <i>Liparis, dispar</i> , | gipsy moth, very destructive to fruit trees, etc., on the continent, rarer in England, sketch of insect laying eggs on bark. |  |
| 23. | „ „                      | magnified sketch of larva.                                                                                                   |  |
| 24. | „ „                      | specimens of larva.                                                                                                          |  |
| 25. | „ „                      | specimens of chrysalis.                                                                                                      |  |
| 26. | „ „                      | magnified sketch of chrysalis.                                                                                               |  |
| 27. | „ „                      | magnified sketch of moth, male.                                                                                              |  |
| 28. | „ „                      | specimen of do.                                                                                                              |  |
| 29. | „ „                      | magnified sketch of moth, female.                                                                                            |  |
| 30. | „ „                      | specimen of do.                                                                                                              |  |

CASE XCII.

LEPIDOPTERA—*continued.*

BOMBYCES—LIPARIDÆ—*continued.*

- |     |                           |                                                                                              |
|-----|---------------------------|----------------------------------------------------------------------------------------------|
| 1.  | <i>Liparis monacha</i> ,  | the black arches moth, feeds on leaves of the Scotch fir, sketch of eggs of do., magnified.  |
| 2.  | „ „                       | magnified sketch of larva.                                                                   |
| 3.  | „ „                       | specimen of larva.                                                                           |
| 4.  | „ „                       | specimens of pupa.                                                                           |
| 5.  | „ „                       | magnified sketch of pupa.                                                                    |
| 6.  | „ „                       | magnified sketch of male moth.                                                               |
| 7.  | „ „                       | „ „ female.                                                                                  |
| 8.  | „ „                       | specimens of male.                                                                           |
| 9.  | „ „                       | „ female.                                                                                    |
| 10. | <i>Orgyia fascelina</i> , | the dark tussock moth, feeds on plum and hazel, magnified sketch of larva.                   |
| 11. | „ „                       | magnified sketch of moth.                                                                    |
| 12. | „ „                       | specimen of do., male.                                                                       |
| 13. | „ „                       | specimen of do., female.                                                                     |
| 14. | „ <i>pudibunda</i> ,      | the pale tussock moth, feeds on oak, lime, and various other trees, specimens of eggs of do. |
| 15. | „ „                       | magnified sketch of larva, called the Hop dog, greenish variety.                             |
| 16. | „ „                       | specimen of do.                                                                              |
| 17. | „ „                       | magnified sketch of larva, pink variety.                                                     |
| 18. | „ „                       | specimen of do.                                                                              |
| 19. | „ „                       | sketch of cocoon.                                                                            |
| 20. | „ „                       | specimen of do.                                                                              |
| 21. | „ „                       | magnified sketch of female moth.                                                             |
| 22. | „ „                       | specimens of moth, male.                                                                     |
| 23. | „ „                       | specimens of do., female.                                                                    |



NO.

24. *Orgyia antiqua*, the common vapourer moth, feeds on almost every plant, specimen of eggs of do.
25. „ „ magnified sketch of do.
26. „ „ specimens of larva of all ages.
27. „ „ magnified sketch of larva.
28. „ „ specimens of cocoon.
29. „ „ magnified sketch of male moth.
30. „ „ specimens of do.
31. „ „ magnified sketch of female moth.
32. „ „ specimens of do.

## CASE XCIII.

LEPIDOPTERA—*continued.*BOMBYCES—*continued.* BOMBYCIDÆ.*Bombyx mori*.—(The Common Silk Worm.)

(In progress.)

## CASE XCIV.

LEPIDOPTERA—*continued.*BOMBYCES—BOMBYCIDÆ—*continued.**Bombyx mori*—*continued.*

(In progress.)

## CASE XCV.

LEPIDOPTERA—*continued.*BOMBYCES—BOMBYCIDÆ—*continued.*

1. *Trichiura cratægi*, the pale-oak eggar moth, feeds on the hawthorn, sketch of moth, magnified.
2. „ „ specimens of do.
3. *Pecilocampa populi*, the December moth, the larva feeds on the oak and other trees, sketch of moth, magnified.
4. „ „ specimens of do.
5. *Eriogaster lanestris*, the small eggar moth, feeds on hawthorn and fruit trees, &c., specimen of the eggs deposited like a bracelet round thorn twigs, and covered with down from the tail of the moth.

6. *Eriogaster lanestris*, magnified sketch of deposit of eggs of do.  
 7. " " " sketch of caterpillars of do., young and full-grown, magnified.  
 8. " " " specimens of caterpillars of do., young, middle-aged, and full-grown.  
 9. " " " magnified sketch of cocoon of do., broken open to show chrysalis inside.  
 10. " " " specimens of cocoon of do., one cut in two to show chrysalis.  
 11. " " " magnified sketch of the moth of do.  
 12. " " " specimens of do.  
 13. *Bombyx neustria*, the lackey moth, feeds on the rose, the apple, and other fruit trees, magnified sketch of eggs deposited round a thorn twig like a bracelet.  
 14. " " " specimens of eggs of do., deposited round twig.  
 15. " " " sketch of do., more highly magnified.  
 16. " " " sketch of caterpillar, magnified.  
 17. " " " specimens of caterpillar.  
 18. " " " specimens of cocoon.  
 19. " " " specimen of web, spun as a house of protection from rain, etc., by the caterpillars, living in society.  
 20. " " " another specimen of do.  
 21. " " " another specimen of do.  
 22. " " " specimen of branch, with protecting web.  
 23. " " " specimens of moth, male.  
 24. " " " " " female.  
 25. " " " sketch of male, magnified.  
 26. " " " " female, do.

## CASE XCVI.

LEPIDOPTERA—*continued.*BOMBYCES—BOMBYCIDÆ.—*continued.*

1. *Bombyx castrensis*, feeds on the wild carrot and other plants, magnified sketch of larva of do.  
 2. " " " specimen of do.  
 3. " " " magnified sketch of moth, male.  
 4. " " " specimens of do.  
 5. " " " magnified sketch of female moth.  
 6. " " " specimens of do.  
 7. " " *rubi*, the fox moth, feeds on the bramble, magnified sketch of larva.  
 8. " " " specimens of do.  
 9. " " " magnified sketch of moth, male.

- NO.  
 10. *Bombyx rubi*, specimen of moth, male.  
 11. " " " female.  
 12. " " magnified sketch of do.  
 13. " *quercus*, the oak eggar, feeds on the oak, magnified sketch of egg.  
 14. " " specimens of egg.  
 15. " " magnified sketch of young stages of larva.  
 16. " " specimens of do.  
 17. " " magnified sketch of full-grown do.  
 18. " " specimens of do.  
 19. " " magnified sketch of cocoon.  
 20. " " specimen of do.  
 21. " " magnified sketch of male moth.  
 22. " " specimens of do.  
 23. " " magnified sketch of female moth.  
 24. " " specimens of do.  
 25. " *trifolii*, the grass eggar, feeds on clover, magnified sketch of larva.  
 26. " " specimens of do.  
 27. " " magnified sketch of cocoon of do.  
 28. " " specimen of do.  
 29. " " magnified sketch of male moth.  
 30. " " specimen of do.  
 31. " " specimen of female do.

## CASE XCVII.

LEPIDOPTERA—*continued.*BOMBYCIDES—BOMBYCIDÆ—*continued.*

1. *Odonestis potatoria*, the drinker moth, feeds on grass, sketch of caterpillars, slightly magnified.  
 2. " " specimen of caterpillar.  
 3. " " magnified sketch of cocoon.  
 4. " " specimens of cocoons.  
 5. " " magnified sketch of moth.  
 6. " " specimens of moth, male.  
 7. " " " " female.  
 8. *Lasiocampa quercifolia*, the lappet moth, feeds on the willow and black-thorn, eggs of.  
 9. " " magnified sketch of eggs, one fresh and one addled.  
 10. " " sketch of caterpillar, natural size.  
 11. " " specimens of caterpillar, various ages.  
 12. " " specimens of cocoons of.  
 13. " " magnified sketch of cocoon.  
 14. " " " " chrysalis.

- |     |                                 |                        |                                                                                |
|-----|---------------------------------|------------------------|--------------------------------------------------------------------------------|
| NO. |                                 |                        |                                                                                |
| 15. | <i>Lasiocampa quercifolia</i> , | specimen of chrysalis. |                                                                                |
| 16. | "                               | "                      | magnified sketch of moth.                                                      |
| 17. | "                               | "                      | specimens of moth, male.                                                       |
| 18. | "                               | "                      | " " female.                                                                    |
| 19. | "                               | <i>ilicifolia</i> ,    | the small lappet moth, feeds on the whortleberry,<br>magnified sketch of moth. |
| 20. | "                               | "                      | specimen of moth.                                                              |
| 21. | <i>Endromis versicolor</i> ,    | the Kentish glory,     | feeds on the birch, sketch of caterpillar.                                     |
| 22. | "                               | "                      | specimen of do.                                                                |
| 23. | "                               | "                      | magnified sketch of cocoon.                                                    |
| 24. | "                               | "                      | magnified sketch of perfect moth, male.                                        |
| 25. | "                               | "                      | specimen of do.                                                                |
| 26. | "                               | "                      | magnified sketch of moth, female.                                              |
| 27. | "                               | "                      | specimen of do.                                                                |

CASE XCVIII.

LEPIDOPTERA—*continued.*

BOMBYCES—SATURNIADÆ (European).

(In progress.)

CASE XCIX.

LEPIDOPTERA—*continued.*

BOMBYCES—SATURNIADÆ—*continued.* (Exotic.)

(In progress.)

CASE C.

LEPIDOPTERA—*continued.*

BOMBYCES—SATURNIADÆ (Exotic)—*continued.*

(Tusseh and Ailanthus Silkworms).

(In progress.)

## CASE CI.

LEPIDOPTERA—*continued*.BOMBYCES—NOTODONTIDÆ (Cuspidates, *Doubleday*).

- |     |                   |                                                          |
|-----|-------------------|----------------------------------------------------------|
| no. |                   |                                                          |
| 1.  | Dicranura vinula, | magnified sketch of eggs of do.                          |
| 2.  | " "               | specimens of eggs of do.                                 |
| 3.  | " "               | magnified sketch of green variety of caterpillar of do.  |
| 4.  | " "               | specimen of do.                                          |
| 5.  | " "               | magnified sketch of caterpillar of do., another variety. |
| 6.  | " "               | specimens of do.                                         |
| 7.  | " "               | magnified sketch of cocoon of do.                        |
| 8.  | " "               | specimens of do.                                         |
| 9.  | " "               | magnified sketch of chrysalis of do.                     |
| 10. | " "               | specimens of do.                                         |
| 11. | " "               | magnified sketch of perfect insect.                      |
| 12. | " "               | specimens of male do.                                    |
| 13. | " "               | " " female do.                                           |
| 14. | " bifida,         | magnified sketch of larva of do.                         |
| 15. | " "               | magnified sketch of perfect insect.                      |
| 16. | " "               | specimen of do.                                          |
| 17. | " furcula,        | magnified sketch of larva of do.                         |
| 18. | " "               | magnified sketch of perfect insect.                      |
| 19. | " "               | specimen of do.                                          |
| 20. | Clostera curtula, | magnified sketch of larva of do.                         |
| 21. | " "               | specimen of do.                                          |
| 22. | " "               | magnified sketch of perfect insect.                      |
| 23. | " "               | specimens of do.                                         |
| 24. | " anachoreta,     | magnified sketch of moth.                                |
| 25. | " "               | specimens of do.                                         |
| 26. | " reclusa,        | magnified sketch of moth.                                |
| 27. | " "               | specimens of do.                                         |
| 28. | " anastomosis,    | magnified sketch of moth.                                |
| 29. | " "               | specimens of larva of do.                                |

## CASE CII.

LEPIDOPTERA—*continued*

## NOCTUÆ (Acronycta).

(In progress.)

## CASE CIII.

LEPIDOPTERA—*continued.*NOCTUÆ—*continued.*

- |     |                            |                                                                                                             |
|-----|----------------------------|-------------------------------------------------------------------------------------------------------------|
| NO. |                            |                                                                                                             |
| 1.  | <i>Mamestra brassicæ</i> , | cabbage moth, larva very destructive to cabbage crops, model of cabbage leaf attacked by caterpillar of do. |
| 2.  | „ „                        | sketch of caterpillar of do. magnified.                                                                     |
| 3.  | „ „                        | specimens of larva of do.                                                                                   |
| 4.  | „ „                        | sketch of green variety of do. magnified.                                                                   |
| 5.  | „ „                        | specimens of do.                                                                                            |
| 6.  | „ „                        | sketch of chrysalis of do. magnified.                                                                       |
| 7.  | „ „                        | specimens of chrysalis of do.                                                                               |
| 8.  | „ „                        | sketch of moth magnified.                                                                                   |
| 9.  | „ „                        | specimens of do.                                                                                            |
| 10. | „ „                        | <i>persicariæ</i> , a very general feeder, and very common, magnified sketch of variety of caterpillar.     |
| 11. | „ „                        | specimens of do.                                                                                            |
| 12. | „ „                        | sketch of moth magnified.                                                                                   |
| 13. | „ „                        | specimens of do.                                                                                            |
| 14. | <i>Agrotis segetum</i> ,   | the dart moth, one of the surface grubs very destructive to various crops, sketch of caterpillar magnified. |
| 15. | „ „                        | specimens of do.                                                                                            |
| 16. | „ „                        | sketch of moth.                                                                                             |
| 17. | „ „                        | specimens of do.                                                                                            |
| 18. | „ „                        | <i>exclamationis</i> , very injurious to turnips, sketch of the caterpillar magnified.                      |
| 19. | „ „                        | specimens of do.                                                                                            |
| 20. | „ „                        | sketch of the chrysalis of do. magnified.                                                                   |
| 21. | „ „                        | specimens of do.                                                                                            |
| 22. | „ „                        | sketch of moth, male, magnified.                                                                            |
| 23. | „ „                        | specimens of do.                                                                                            |
| 24. | „ „                        | sketch of do., female, magnified.                                                                           |
| 25. | „ „                        | specimens of do.                                                                                            |
| 26. | „ „                        | model of a turnip attacked by the larvæ of this insect.                                                     |
| 27. | „ „                        | model of turnip with form of Anbury or finger and toes, cause not determined.                               |
| 28. | „ „                        | sketch of turnip with finger and toes, cause not known.                                                     |

## CASE CIV.

LEPIDOPTERA—*continued.*NOCTUÆ—*continued.*

20. 1. *Agrotis nigricans*, very destructive to clover and some other crops, magnified sketch of pupa.
2. " " specimen of do.
3. " " specimens of moth.
4. " " magnified sketch of do.
5. " *tritici*, sometimes very destructive to wheat and other crops, specimen of pupa.
6. " " specimens of moth.
7. " " magnified sketch of ditto.
8. *Noctua xanthographa*, feeds on various grasses, magnified sketch of moth.
9. " " specimens of do.
10. *Triphaena fimbria*, feeds on the birch, willow, and other trees, magnified sketch of moth, pale variety, wings extended.
11. " " do. dark variety, wings closed.
12. " " specimens of do.
13. " *pronuba*, feeds on turnips, magnified sketch of larva.
14. " " specimens of larva.
15. " " magnified sketch of pupa.
16. " " specimens of do.
17. " " magnified sketch of moth, dark variety.
18. " " specimens of do.
19. *Trachea piniperda*, very destructive to pine forests in Germany, magnified sketch of eggs.
20. " " magnified sketch of larva.
21. " " specimen of larva.
22. " " specimen of pupa.
23. " " magnified sketch of do.
24. " " magnified sketch of moth, male.
25. " " specimens of do.
26. " " magnified sketch of female at rest.
27. *Orthosia upsilon*, feeds on the willow in great numbers, magnified sketch of larva.
28. " " specimen of larva.
29. " " magnified sketch of pupa.
30. " " specimen of pupa.
31. " " specimens of moth.
32. " " magnified sketch of do.

## CASE CV.

LEPIDOPTERA—*continued.*NOCTUÆ—*continued.*

NO.

1. *Hadena oleracea*, feeds on many plants and is common, magnified sketch of caterpillar of do., from specimen fed on onion.
2. „ „ magnified sketch of usual variety of do.
3. „ „ specimens of caterpillar.
4. „ „ magnified sketch of moth.
5. „ „ specimens of do.
6. *Gonoptera libatrix*, the herald moth, feeds on the willow, magnified sketch of perfect insect.
7. „ „ specimen of perfect insect.
8. *Xanthia silago*, feeds on the willow, magnified sketch of caterpillar.
9. „ „ specimens of do.
10. „ „ magnified sketch of perfect insect.
11. „ „ specimens of do.
12. *Nænia typica*, the gothic moth, the larva feeds on plum, peach, &c., magnified sketch of caterpillar.
13. „ „ specimen of do.
14. „ „ magnified sketch of perfect insect.
15. „ „ specimens of do.
16. *Dianthœcia capsicola*, larva feeds on the seeds of *Lychnis*, &c., magnified sketch of caterpillar.
17. „ „ specimens of do., one in seed pod of *Lychnis*.
18. „ „ magnified sketch of perfect insect.
19. „ „ specimens of do.
20. *Cucullia verbasci*, the mullein moth, the larva feeds on the mullein, magnified sketch of caterpillar of do., and specimens.
21. „ „ magnified sketch of perfect insect.
22. „ „ specimens of perfect insect.
23. *Plusia gamma*, the Y moth, the larva sometimes makes great devastation on the crops of peas, beans, &c., magnified sketch of egg.
24. „ „ magnified sketch of caterpillar.
25. „ „ magnified sketch of perfect insect.
26. „ „ specimens of perfect insect.
27. *Phlogophora meticulosa*, the angle-shades moth, larva feeds on chrysanthemum, &c., magnified sketch of the moth.
28. „ „ specimens of perfect insect.
29. *Catocala nupta*, red under-wing moth, larva feeds on willow, magnified sketch of caterpillar.
30. „ „ specimens of do.
31. „ „ cocoon of do.



- NO.  
 32. *Catocala nupta*, magnified sketch of chrysalis.  
 33. „ „ specimens of perfect insect.  
 34. „ „ magnified sketch of do.  
 35. *Euclidia mi*, Mother Shipton moth, the larva feeds on common trefoil, magnified sketch of caterpillar.  
 36. „ „ specimen of do. (o).  
 37. „ „ magnified sketch of perfect insect.  
 38. „ „ specimens of perfect insect.  
 39. „ *glyphica*, the Burnet moth, larva feeds on purple clover, magnified sketch of caterpillar.  
 40. „ „ specimen of do.  
 41. „ „ magnified sketch of moth.  
 42. „ „ specimens of perfect insect.

## CASE CVI.

LEPIDOPTERA—*continued.*

## GEOMETRÆ.

(In progress.)

## CASE CVII.

LEPIDOPTERA—*continued.*

## PYRALIDINÆ.

(In progress.)

## CASE CVIII.

LEPIDOPTERA—*continued.*

## TORTRICINA (Leaf-rollers).

1. *Tortrix vitana*, very destructive formerly to the vines in France, nearly innocuous now, sketch of eggs magnified.
2. „ „ sketch of caterpillar magnified.
3. „ „ sketch of vine leaves with patches of eggs laid on them, showing gradations of colour through which they pass.
4. „ „ sketch of young caterpillars hanging from the leaves and descending the branches to spin a shelter for the winter under the bark.
5. „ „ sketch of young caterpillars emerging from their winter silken case as the buds of the vine are breaking out.

- NO.  
 6. *Tortrix vitana*, sketch of a vine branch with leaves eaten and rolled up, and half cut off by the larvæ of *Tortrix vitana*.  
 7. " " sketch of vine branch damaged and disfigured by the larvæ cutting the leaves half off to dry them and attaching them to sound leaves while they pass into the chrysalis in them.  
 8. " " sketch of chrysalis magnified.  
 9. " " specimen of perfect insect magnified.  
 10. " " magnified sketch of insect, medium variety.  
 11. " " magnified do., moderately dark variety.  
 12. " " magnified do., light variety.  
 13. " " " " dark variety.  
 14. *Carpocapsa pomonella*, the codling moth, very destructive to apples and pears, eggs laid inside in the early stage of the fruit; sketch of larva magnified.  
 15. " " specimens of do.  
 16. " " sketch of apples attacked by do.  
 17. " " model of an apple attacked by do.  
 18. " " sketch of moth magnified.  
 19. " " specimen of do.

## CASE CIX.

LEPIDOPTERA—*continued*.TORTRICINA (Leaf-rollers)—*continued*.

(In progress.)

## CASE CX.

LEPIDOPTERA—*continued*.

TINEINA (Clothes-moths).

(Undergoing re-arrangement.)

## CASE CXI.

LEPIDOPTERA—*continued*.

TINEINA (Leaf-miners).

1. *Nepticula aurella*, mines in rose leaves, magnified sketch of larva.  
 2. " " specimen of do.  
 3. " " sketch of cocoon, magnified.

|     |                            |                                                                                   |
|-----|----------------------------|-----------------------------------------------------------------------------------|
| NO. |                            |                                                                                   |
| 4.  | <i>Nepticula aurella</i> , | specimen of do.                                                                   |
| 5.  | "                          | sketch of perfect insect, magnified.                                              |
| 6.  | "                          | specimen of do.                                                                   |
| 7.  | "                          | rose leaves mined by do.                                                          |
| 8.  | "                          | sketch of do.                                                                     |
| 9.  | "                          | <i>anomalella</i> , mines in rose leaves, magnified sketch of larva.              |
| 10. | "                          | specimen of do.                                                                   |
| 11. | "                          | sketch of cocoon, magnified.                                                      |
| 12. | "                          | specimen of do.                                                                   |
| 13. | "                          | sketch of perfect insect, magnified.                                              |
| 14. | "                          | specimen of do.                                                                   |
| 15. | "                          | rose leaves mined by do.                                                          |
| 16. | "                          | sketch of do.                                                                     |
| 17. | "                          | <i>angulifasciella</i> , rose leaf miner, sketch of larva, magnified.             |
| 18. | "                          | specimen of do.                                                                   |
| 19. | "                          | sketch of cocoon, magnified.                                                      |
| 20. | "                          | specimen of do.                                                                   |
| 21. | "                          | sketch of perfect insect, magnified.                                              |
| 22. | "                          | specimen of do.                                                                   |
| 23. | "                          | rose leaves mined by do.                                                          |
| 24. | "                          | sketch of do.                                                                     |
| 25. | "                          | <i>malella</i> , mines in apple leaves, sketch of larva, magnified.               |
| 26. | "                          | specimen of do.                                                                   |
| 27. | "                          | sketch of cocoon, magnified.                                                      |
| 28. | "                          | specimen of do.                                                                   |
| 29. | "                          | sketch of perfect insect, magnified.                                              |
| 30. | "                          | specimen of do.                                                                   |
| 31. | "                          | apple leaf mined by do.                                                           |
| 32. | "                          | sketch of do.                                                                     |
| 33. | "                          | <i>plagiocolella</i> , mines in sloe and plum leaves, sketch of larva, magnified. |
| 34. | "                          | specimen of do.                                                                   |
| 35. | "                          | sketch of cocoon, magnified.                                                      |
| 36. | "                          | specimen of do.                                                                   |
| 37. | "                          | sketch of perfect insect, magnified.                                              |
| 38. | "                          | specimen of do.                                                                   |
| 39. | "                          | sloe leaves mined by do.                                                          |
| 40. | "                          | sketch of do.                                                                     |

## CASE CXII.

LEPIDOPTERA—*continued.*TINEINA (Leaf-miners).—*continued.*

- |     |                            |                                                                                          |
|-----|----------------------------|------------------------------------------------------------------------------------------|
| NO. |                            |                                                                                          |
| 1.  | <i>Nepticula salicis</i> , | mines in leaves of willow, sketch of larva, magnified.                                   |
| 2.  | " "                        | specimen of do.                                                                          |
| 3.  | " "                        | sketch of cocoon, magnified.                                                             |
| 4.  | " "                        | specimen of do.                                                                          |
| 5.  | " "                        | sketch of perfect insect, magnified.                                                     |
| 6.  | " "                        | specimen of do.                                                                          |
| 7.  | " "                        | " " willow leaf mined by do.                                                             |
| 8.  | " "                        | sketch of do.                                                                            |
| 9.  | " "                        | <i>microtheriella</i> , mines in leaves of nut and hornbeam, sketch of larva, magnified. |
| 10. | " "                        | specimen of do.                                                                          |
| 11. | " "                        | sketch of cocoon, magnified.                                                             |
| 12. | " "                        | specimen of do.                                                                          |
| 13. | " "                        | sketch of perfect insect, magnified.                                                     |
| 14. | " "                        | specimen of do.                                                                          |
| 15. | " "                        | " " nut leaf mined by do.                                                                |
| 16. | " "                        | sketch of do.                                                                            |
| 17. | " "                        | <i>trimaculella</i> , poplar leaf miner, sketch of larva, magnified.                     |
| 18. | " "                        | specimen of do.                                                                          |
| 19. | " "                        | sketch of cocoon, magnified.                                                             |
| 20. | " "                        | specimen of do.                                                                          |
| 21. | " "                        | sketch of perfect insect, magnified.                                                     |
| 22. | " "                        | specimen of do.                                                                          |
| 23. | " "                        | " " poplar leaf mined by do.                                                             |
| 24. | " "                        | sketch of do.                                                                            |
| 25. | " "                        | <i>ruficapitella</i> , oak leaf miner, sketch of larva, magnified.                       |
| 26. | " "                        | specimen of do.                                                                          |
| 27. | " "                        | sketch of cocoon, magnified.                                                             |
| 28. | " "                        | specimen of do.                                                                          |
| 29. | " "                        | sketch of perfect insect, magnified.                                                     |
| 30. | " "                        | specimen of do.                                                                          |
| 31. | " "                        | " " oak leaf mined by do.                                                                |
| 32. | " "                        | sketch of do.                                                                            |
| 33. | " "                        | <i>subbimaculella</i> , oak leaf miner, sketch of larva, magnified.                      |
| 34. | " "                        | specimen of do.                                                                          |
| 35. | " "                        | sketch of cocoon, magnified.                                                             |
| 36. | " "                        | specimen of do.                                                                          |
| 37. | " "                        | sketch of perfect insect, magnified.                                                     |
| 38. | " "                        | specimen of do.                                                                          |

- CASE CX111.**

**TINEINA (Leaf-miners).—continued.**

1. *Ptychopoda pygmaella*, a hawthorn leaf miner, sketch of larva, magnified.
2. " " specimens of larva.
3. " " sketch of cocoon, magnified.
4. " " specimen of cocoon.
5. " " sketch of perfect insect, magnified.
6. " " specimen of perfect insect.
7. " " " hawthorn leaf mined by perfect insect.
8. " " sketch of hawthorn leaf mined by perfect insect.
9. " *ignobilella*, hawthorn leaf miner, sketch of larva, magnified.
10. " " specimen of larva.
11. " " sketch of cocoon, magnified.
12. " " specimen of cocoon.
13. " " sketch of perfect insect, magnified.
14. " " specimen of perfect insect.
15. " " hawthorn leaf mined by perfect insect.
16. " " sketch of hawthorn leaf mined by perfect insect.
17. " *oxyacanthella*, a hawthorn leaf miner, sketch of larva, magnified.
18. " " specimen of larva.
19. " " sketch of cocoon, magnified.
20. " " specimen of cocoon.
21. " " sketch of perfect insect, magnified.
22. " " specimen of perfect insect.
23. " " " hawthorn leaf mined by perfect insect.
24. " " sketch of hawthorn leaf mined by perfect insect.
25. " *viscerella*, elm leaf miner, sketch of larva, magnified.
26. " " specimen of larva.
27. " " sketch of cocoon, magnified.
28. " " specimen of cocoon.
29. " " sketch of perfect insect, magnified.
30. " " specimen of perfect insect.
31. " " " elm leaf mined by perfect insect.
32. " " sketch of elm leaf mined by perfect insect.
33. " *tityrella*, beech leaf miner, sketch of larva, magnified.
34. " " specimen of larva.
35. " " sketch of cocoon, magnified.

- NO.  
 36. *Nepticula tityrella*, specimen of cocoon.  
 37. " " sketch of perfect insect, magnified.  
 38. " " specimen of perfect insect.  
 39. " " " beech leaf mined by perfect insect.  
 40. " " sketch of beech leaf mined by perfect insect.

## CASE CXIV.

LEPIDOPTERA—*continued*.TINEINA (Leaf-miners).—*continued*.

1. *Cemiostoma scitella*, mines the leaves of the pear, the hawthorn, &c.,  
 sketch of larva, magnified.  
 2. " " specimen of larva.  
 3. " " sketch of cocoon, magnified.  
 4. " " specimen of cocoon.  
 5. " " sketch of perfect insect, magnified.  
 6. " " specimen of perfect insect.  
 7. " " hawthorn leaf mined by perfect insect.  
 8. " " sketch of hawthorn leaf mined by perfect insect.  
 9. " " leaf of pear tree mined by perfect insect.  
 10. " " another example of do.  
 11. " " do. do.  
 12. " " sketch of pear leaf mined by perfect insect.  
 13. " " leaf of pear tree mined by perfect insect, in which  
 the mined circles have dropped out.  
 14. " *laburnella*, mines laburnum leaves, sketch of larva, mag-  
 nified.  
 15. " " specimen of larva.  
 16. " " sketch of cocoon, magnified.  
 17. " " specimen of cocoon, summer brood.  
 18. " " sketch of cocoon, autumn brood, magnified.  
 19. " " specimen of cocoon.  
 20. " " sketch of perfect insect, magnified.  
 21. " " specimen of perfect insect.  
 22. " " leaves of laburnum mined by larva, early stage.  
 23. " " do. more advanced.  
 24. " " do. do. appearance at a later period.  
 25. " " sketch of leaves of laburnum mined by do.  
 26. " *spartifoliella*, mines broom leaves, magnified sketch of  
 larva.  
 27. " " specimen of larva.  
 28. " " sketch of perfect insect, magnified.  
 29. " " specimen of perfect insect.

no.

30. *Cemiosoma scitella*, sketch of broom twigs with larva.  
 31. " " , illustrative vignette of broom twigs with larvæ  
 hanging from them.

## CASE CXV.

LEPIDOPTERA—*continued.*TINEINA—*continued.* COLEOPHORIDÆ.

(In progress.)

## CASE CXVI.

LEPIDOPTERA—*continued.*TINEINA—*continued.* LAVERNIDÆ, &c.

(In progress.)

## CASE CXVII.

COLEOPTERA.

GEODEPHAGA—HYDRADEPHAGA.

(In progress.)

## CASE CXVIII.

COLEOPTERA—*continued.*

NITIDULIDÆ—DERMESTIDÆ, &amp;c.

(In progress.)

## CASE CXIX.

COLEOPTERA—*continued.*

LAMELLICORNES—DYNASTIDÆ AND LUCANIDÆ.

1. *Oryctes nasicornis*, feeds on oak, oak bark, etc., magnified sketch of  
larva of do.
2. " " specimens of larva of do.
3. " " sketch of earthen pupa case of do.
4. " " specimen of earthen pupa case of do.
5. " " specimen of pupæ of do.
6. " " magnified sketch of do.

- NO.  
 7. *Oryctes nasicornis*, magnified sketch of male perfect insect of do.  
 8. „ „ specimens of male perfect insect of do.  
 9. „ „ specimens of female.  
 10. „ „ magnified sketch of female.  
 11. *Sinodendron cylindricum*, feeds on timber of beech and other trees, magnified sketch of male.  
 12. „ „ specimens of do.  
 13. „ „ specimen of female do.  
 14. „ „ magnified sketch of female.  
 15. *Dorcus parallelipipedus*, feeds on oak timber, magnified sketch of larva of do.  
 16. „ „ specimens of do.  
 17. „ „ specimen of pupa case of do., in oak wood, with pupa enclosed.  
 18. „ „ sketch of larva of do.  
 19. „ „ magnified sketch of pupa.  
 20. „ „ magnified sketch of male perfect insect.  
 21. „ „ specimens of do.  
 22. „ „ specimens of female.  
 23. „ „ magnified sketch of do.  
 24. „ „ borings of this insect in timber, with 2 specimens coming out.  
 25. „ „ borings of do. in oak timber.  
 26. *Lucanus cervus*, the stag beetle, sketch of the larva of do., natural size, feeds on oak timber.  
 27. „ „ sketch of earthen pupa case of do., natural size.  
 28. „ „ specimens of male beetle, larger from Germany, smaller from England.  
 29. „ „ magnified sketch of male beetle.  
 30. „ „ specimens of female beetle.  
 31. „ „ magnified sketch of do.

## CASE CXX.

COLEOPTERA—*continued.*LAMELLICORNES—*continued.* MELOLONTHIDÆ, &c.

(In progress.)

## CASE CXXI.

COLEOPTERA—*continued.*

BUPRESTIDÆ.

(In progress.)



## CASE CXXII.

COLEOPTERA—*continued.*

## ELATERIDÆ—(Wire Worms and Fire Flies.)

- no.  
 1. *Lacon murinus*, injurious to grain crops, magnified sketch of larva.  
 2. " " specimens of do.  
 3. " " magnified sketch of perfect insect.  
 4. " " specimens of do.  
 5. *Monocrepidius communis*, a common Elater in the United States, magnified sketch of do.  
 6. " " specimens of do.  
 7. *Corymbites cupreus*, magnified sketch of male.  
 8. " " specimens of do.  
 9. " " magnified sketch of female.  
 10. " " specimen of do.  
 11. " *holosericeus*, magnified sketch of.  
 12. " " specimens of do.  
 13. " *æneus*, magnified sketch of perfect insect.  
 14. " " specimens of do.  
 15. *Athous niger*, magnified sketch of.  
 16. " " specimens of do.  
 17. " *longicollis*, magnified sketch of do.  
 18. " " specimen of do.  
 19. *Agriotes obscurus*, magnified sketch of root of grass, showing how the wire worm attacks it.  
 20. " " magnified sketch of larva.  
 21. " " specimens of do.  
 22. " " magnified sketch of perfect insect.  
 23. " " specimens of do.  
 24. " " illustrative vignette of best mode of dealing with wire worm, clearing the land and burning the weeds.  
 25. " *sputator*, magnified sketch of do.  
 26. " " specimens of do.  
 27. " *lineatus*, magnified sketch of do.  
 28. " " specimens of do.  
 29. *Dolopius marginatus*, magnified sketch of do.  
 30. " " specimens of do.  
 31. *Adrastus limbatus*, magnified sketch of do.  
 32. " " specimen of do.  
 33. *Melanotus rufipes*, magnified sketch of larva.  
 34. " " specimens of do.  
 35. " " magnified sketch of perfect insect.  
 36. " " specimen of do.

- NO.  
 37. *Elater sanguinolentus*, magnified sketch of do.  
 38. „ „ specimens of do.  
 39. „ *sanguineus*, magnified sketch of do.  
 40. „ „ specimens of do.  
 41. „ *balteatus*, magnified sketch of do.  
 42. „ „ specimens of do.  
 43. *Pyrophorus noctilucus*, the fire-fly, South America, magnified sketch of do.  
 44. „ „ specimens of do.  
 45. „ *scintillans*, magnified sketch of do.  
 46. „ „ specimens of do.  
 47. „ *pyrophanus*, magnified sketch of do.  
 48. „ „ specimens of do.

## CASE CXXIII.

COLEOPTERA—*continued.*

## MALACODERMATA (Glow Worms, &amp;c.).

(In progress.)

## CASE CXXIV.

COLEOPTERA—*continued.*

## ANOBIIDÆ (Death Ticks, Borers in Bark Timber).

1. *Xyletinus pectinatus*, very injurious to most vegetable stores, sketch of insect, magnified.
2. „ „ specimens of insect.
3. *Ptilinus pectinicornis*, injurious to old timber, furniture, etc., sketch of insect, magnified.
4. „ „ specimens of insect.
5. *Anobium tessellatum*, generally bores in oak timber, sketch of larva, magnified.
6. „ „ specimen of do.
7. „ „ sketch of insect, magnified.
8. „ „ specimen of larva.
9. „ „ piece of oak timber bored by do.
10. „ *striatum*, the common death watch, sketch of larva, magnified.
11. „ „ specimen of larva.
12. „ „ sketch of perfect insect, magnified.
13. „ „ specimens of do.
14. „ „ piece of walnut wood much bored by the death watch, but exterior left almost untouched.

- NO.  
 15. *Anobium striatum*, elm wood bored by do.  
 16. „ „ *molle*, usually breeds in fir and pine timber, sketch of insect, magnified.  
 17. „ „ „ specimens of insect.  
 18. „ „ *paniceum*, very destructive to stores of grain, flour, almonds, and most kinds of vegetable products, sketch of larva, magnified.  
 19. „ „ „ specimens of larva.  
 20. „ „ „ sketch of beetle, magnified.  
 21. „ „ „ specimens of insect.  
 22. „ „ „ portion of an American flour barrel riddled by do.  
 23. *Gibbium scotias*, very destructive to dried vegetable products, plants in Herbaria, &c., sketch of insect, magnified.  
 24. „ „ „ specimen of insect.  
 25. *Mezium sulcatum*, destructive to dried vegetable products, plants in Herbaria, &c., sketch of insect, magnified.  
 26. „ „ „ specimens of do.  
 27. *Ptinus fur*, very injurious to museums, clothes, furs, and stores of all kinds, animal and vegetable, sketch of insect, magnified.  
 28. „ „ „ specimen of do.  
 29. „ „ *crenatus*, feeds in granaries, sketch of insect, magnified.  
 30. „ „ „ specimen of do.  
 31. „ „ *hololeucus*, bores in old timber and furniture in houses, sketch of insect, magnified.  
 32. „ „ „ specimens of insect.  
 33. „ „ *lepidus*, male, injurious to dried vegetable products, sketch of perfect insect, magnified.  
 34. „ „ „ specimens of do.  
 35. „ „ „ sketch of do., female.  
 36. „ „ „ specimen of do.  
 37. *Lymexylon navale*, very injurious to oak timber, sketch of larva, magnified.  
 38. „ „ „ specimen of do.  
 39. „ „ „ sketch of perfect insect.  
 40. „ „ „ specimens of do.  
 41. „ „ „ sketch of borings made by do. in a piece of oak timber.

## CASE CXXV.

COLEOPTERA—*continued.*

## TENEBRIONIDÆ (Meal-worms, &amp;c.).

- NO.
1. *Blaps mortisaga*, found in cellars and dark places, feeds on vegetable and animal débris, formerly supposed to have something to do with death. Magnified sketch of larva.
  2. „ „ specimens of perfect insect.
  3. „ „ magnified sketch of do.
  4. „ „ group of the insect under straw.
  5. „ „ *lusitanicus*, specimens of beetle, S. Europe, Egypt, etc.
  6. „ „ magnified sketch of beetle.
  7. *Diaperis boleti*, feeds on fungi, magnified sketch of larva.
  8. „ „ magnified sketch of cocoon cut out of fungus in which the larvæ live.
  9. „ „ magnified sketch of perfect insect.
  10. „ „ specimens of do.
  11. *Alphitophagus quadripustulatus*, found under the bark of trees, also found by Stephens in damaged flour, magnified sketch of perfect insect.
  12. „ „ specimens of do.
  13. *Alphitobius piceus*, found in granaries, magnified sketch of perfect insect.
  14. „ „ specimens of do.
  15. *Sitophagus solieri*, probably imported, found at Marseilles, and from the name imposed on it by Mulsant its describer (grain eater) presumed to have been found in grain, magnified sketch of do.
  16. *Tribolium ferrugineum*, found in granaries, flour, &c., magnified sketch of larva.
  17. „ „ specimens of do.
  18. „ „ magnified sketch of perfect insect.
  19. „ „ specimen of do.
  20. *Gnathocerus cornutus*, found in granaries feeding on the grain, magnified sketch of larva.
  21. „ „ magnified sketch of male.
  22. „ „ specimens of do.
  23. „ „ magnified sketch of female.
  24. „ „ specimens of do.
  5. *Hyphophlæus fasciatus*, an enemy to the larvæ of timber-boring beetles, which they destroy, magnified sketch of perfect insect.
  26. „ „ specimens of do.
  27. „ „ bicolor, magnified sketch of larva.

- no.  
 28. *Hyphophlæus bicolor*, magnified sketch of perfect insect.  
 29.    "       "       specimens of do.  
 30.    "       "       specimen of worm-eaten wood from which these were  
       taken in Kensington Gardens.  
 31. *Tenebrio molitor*. The meal-worm. Very common in stores of flour ;  
       magnified sketch of larva.  
 32.    "       "       Specimens of do.  
 33.    "       "       "       "       in flour.  
 34.    "       "       magnified sketch of perfect insect.  
 35.    "       "       specimens.  
 36.    "       *obscurus*, magnified sketch of larva.  
 37.    "       "       magnified sketch of perfect insect.  
 38.    "       *subrugosus*, West African meal-worm ; magnified sketch of beetle.  
 39.    "       "       specimens of.  
 40. *Helops cœruleus*, magnified sketch of larva.  
 41.    "       "       "       "       of perfect insect.  
 42.    "       "       specimens of do.  
 43.    "       *striatus*, injurious to young trees, magnified sketch of perfect insect.  
 44.    "       "       specimens of do.

## CASE CXXVI.

COLEOPTERA—*continued*.

MELANDRYADÆ—MELOIDÆ.—(Oil Beetles.)

(In progress.)

## CASE CXXVII.

COLEOPTERA—*continued*.

MYLABRIDÆ AND CANTHARIDÆ.—(Blister Beetles.)

1. *Cantharis vesicatoria* (common blister fly), feeds on the ash tree in South  
    Europe, magnified sketch of larva.  
 2.    "       "       specimen of do.  
 3.    "       "       magnified sketch of the beetle.  
 4.    "       "       specimens of do.  
 5.    "       *dives*, South Europe, magnified sketch of beetle.  
 6.    "       "       specimen of do.  
 7. *Lagorina scutellata*, South Europe, magnified sketch of beetle.  
 8.    "       "       specimen of do.  
 9. *Mylabris floralis*, Europe, magnified sketch of beetle.  
 10.    "       "       specimens of do.  
 11.    "       *melanura*, Europe, magnified sketch of beetle.  
 12.    "       "       specimens of do.

- NO.  
 13. *Lydus syriacus*, Syria, magnified sketch of beetle.  
 14. " " specimens of do.  
 15. " *trimaculatus*, South Europe, magnified sketch of beetle.  
 16. " " specimens of do.  
 17. *Ctenas crassicornis*, South Europe, magnified sketch of beetle.  
 18. " " specimen of do.  
 19. *Lytta atomaria*, Brazil, used as a blister fly by the inhabitants of Brazil ; magnified sketch of beetle.  
 20. " " specimens of do.  
 21. " *vittata*, North America, used as a blister fly by the inhabitants of the States, magnified sketch of beetle.  
 22. " " specimen of do.  
 23. " *cinerea*, North America, used as a blister fly by the inhabitants, magnified sketch of beetle.  
 24. " " specimens of do.  
 25. " *pennsylvanica*, North America, used as a blister fly, magnified sketch of beetle.  
 26. " " specimens of do.  
 27. *Epicauta marginata*, North America, used as a blister fly, magnified sketch of beetle.  
 28. " " specimens of do.  
 29. *Lytta fulvescens*, North America, magnified sketch of beetle.  
 30. " " specimens of do.  
 31. *Cantharis cyanipennis*, California, magnified sketch of beetle.  
 32. " " specimens of do.  
 33. " *smaragdula*, California, magnified sketch of beetle.  
 34. " " specimens of do.  
 35. *Epicauta nepalensis*, East Indies, magnified sketch of beetle.  
 36. " " specimens of do.  
 37. *Lytta augustata*, *n. sp.*, East Indies, magnified sketch of beetle.  
 38. " " specimens of do.  
 39. " *substituta*, *n. sp.*, East Indies. A doctor in India required *Cantharides* for his patient, and had none, but observed this allied species to be abundant, and used it with success.  
 40. " " specimen of do.  
 41. " *rugicollis*, East Indies, magnified sketch of beetle.  
 42. " " specimen of do.  
 43. *Epicauta cyanea*, East Indies, magnified sketch of beetle.  
 44. " " specimen of do.  
 45. *Mylabris chicatori*, China, used as a blister fly, magnified sketch of beetle.  
 46. " " specimens of do.  
 47. " *pustulata*, East Indies, China, &c., magnified sketch of beetle.  
 48. " " specimens of do.  
 49. *Cantharis nitidula*, Cape of Good Hope, magnified sketch of beetle.

- no.  
 50. *Cantharis nitidula*, specimen of do.  
 51. *Lytta indagacea*, *n. sp.*, Cape of Good Hope, magnified sketch of beetle.  
 52. " " specimens of do.  
 53. *Decatoma lunata*, Cape of Good Hope, magnified sketch of beetle.  
 54. " " specimens of do.  
 55. *Lytta flavicollis*, *n. sp.*, Old Calabar, magnified sketch of beetle.  
 56. " " specimens of do.  
 57. Specimen of powdered Cantharides.  
 58. " Cantharides plaster, made by mixing powdered Cantharides with melted lard, wax, and resin.  
 59. " common old fashioned fly blister spread ready for use.  
 60. " acetate of Cantharidine.  
 61. " blistering tissue, or epipastic paper, as prepared in England.  
 62. " " " as prepared in France.

NOTE.—Blistering tissue is made by mixing a strong ethereal solution of cantharides with wax and spreading it thinly upon tissue paper previously waxed.

63. Specimen of Cantharidine, the active principle of the blister fly, obtained by macerating the flies in ether and evaporating; yield, 2 per cent.

### CASE CXXVIII.

#### COLEOPTERA—*continued*.

##### CURCULIONIDÆ (Weevils).

1. *Sitones lineatus*, very injurious to young pea plants; specimens of early shoots of peas eaten by do.
2. " " sketch of do., magnified.
3. " " sketch of insect, magnified.
4. " " specimens of do.
5. *Phyllobius oblongus*, injures foliage of various trees, sketch of insect, magnified.
6. " " specimens of do.
7. " *pyri*, very injurious to the foliage of the pear tree, sketch of insect, magnified.
8. " " specimens of do.
9. *Otiorhynchus sulcatus*, feeds on roots of herbaceous plants, and is very destructive to the roots of ferns and many garden plants, sketch of larva, magnified.
10. " " specimens of do.
11. " " sketch of insect, magnified.
12. " " specimens of do.
13. " *fuscipes*, injures conifers, sketch of insect, magnified.

14. *Otiorhynchus fuscipes*, specimens of do.
15. *Hylobius abietis*, injurious to conifers, sketch of larva, magnified.
16. " " sketch of insect, magnified.
17. " " specimens of do.
18. *Pissodes notatus*, very destructive to pine forests on the continent and in some parts of Scotland, sketch of insect, magnified.
19. " " specimen of do.
20. " " sketch of fir branch bored by do.
21. *Apion apricans*, feeds on clover, sketch of larva, magnified.
22. " " sketch of pupa, magnified.
23. " " sketch of insect, magnified.
24. " " specimens of do.
25. " *striatum*, feeds on the pea, sketch of insect, magnified.
26. " " specimens of do.
27. " *assimile*, feeds on clover, etc., sketch of insect, magnified.
28. " " specimens of insect.
29. " *pomonæ*, feeds on the vetch, tare, etc., sketch of insect, magnified.
30. " " specimen of do.
31. " *vorax*, feeds on the pea tribes, sketch of insect, magnified.
32. " " specimens of do.
33. *Apoderus coryli*, injures the hazel, sketch of larva, magnified.
34. " " sketch of insect.
35. " " specimens of do.
36. " " sketch of hazel leaf rolled up by do.
37. *Attelabus curculionides*, injures the vine in south of France, and feeds on the oak in England; sketch of mode in which the vine leaves are rolled up for its larvæ by do. in France.
38. " " sketch of insect, magnified.
39. " " specimen of do.
40. " " specimens of oak leaves rolled up for its larva by do. in England.
41. " " sketch of do.
42. *Rhynchites bacchus*, injures the vine, sketch of insect, magnified.
43. " " specimens of do.

CASE CXXIX.

COLEOPTERA—*continued.*

CURCULIONIDÆ—*continued.*

1. *Magdalinus carbonarius*, feeds on the hazel, magnified sketch of larva.
2. " " specimen of do.
3. " *aterrimus*, attacks the hazel, magnified sketch of beetle.



- no.  
 4. *Magdalinus aterrimus*, specimens of do.  
 5. *Balaninus glandium*, feeds on acorns, magnified sketch of larva.  
 6. " " specimens of do.  
 7. " " specimens of larva in phial.  
 8. " " sketch of beetle.  
 9. " " specimens of do.  
 10. " " sketch of acorns in which the eggs of do. have been deposited.  
 11. " " sketch of acorns, and section showing where the grub has begun its work.  
 12. " " sketch of earth cell formed by the grub when it has come out of the acorn, and descended into the ground to become a pupa.  
 13. " " specimens of the earth cells of the pupa of do.  
 14. " *nucum*, feeds on hazel nuts, magnified sketch of larva.  
 15. " " specimen of do.  
 16. " " magnified sketch of beetle.  
 17. " " specimens of do.  
 18. " " magnified sketch of filbert with grub coming out to go to earth.  
 19. " " specimens of hazel nuts perforated by do.  
 20. " *elephas*, feeds on chestnuts, magnified sketch of beetle.  
 21. " " specimen of do.  
 22. " " chestnuts attacked by do., Spain.  
 23. *Anthonomus pomorum*, injures the apple crop, magnified sketch of larva.  
 24. " " specimen of do.  
 25. " " magnified sketch of beetle.  
 26. " " specimens of insects.  
 27. *Orchestes quercus*, feeds on the oak, magnified sketch of beetle.  
 28. " " specimens of do.  
 29. *Orobitis cyaneus*, feeds on seeds of *Viola canina* (dog-tooth violet), magnified sketch of beetle.  
 30. " " specimens of do.  
 31. *Ceutorhynchus sulcicollis* (*C. assimilis*, *Curt.*), the larva feeds on cabbage and turnip stems, making galls, magnified sketch of beetle.  
 32. " " specimen of do.  
 33. " " magnified sketch of larva.  
 34. " " specimens of larvæ.  
 35. " " specimen of young cabbage plant with gall on root formed by do.  
 36. " " sketch of gall on cabbage stem produced by do.  
 37. " " model of gall on cabbage stalk formed by do.

- |     |                                         |                                                               |                                                                                                               |
|-----|-----------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| NO. |                                         |                                                               |                                                                                                               |
| 38. | <i>Ceutorhynchus sulcicollis</i> ,      | gall on roo tstalk of cabbage produced by do.                 | and model of do. when fresh.                                                                                  |
| 39. | "                                       | "                                                             | magnified sketch of earthen cells in which the insect passes the pupa stage.                                  |
| 40. | "                                       | "                                                             | specimens of do.                                                                                              |
| 41. | <i>Calandra (Sitophilus) granaria</i> , | very injurious to stores of grain, especially wheat and rice, | magnified sketch of beetle.                                                                                   |
| 42. | "                                       | "                                                             | specimens of do.                                                                                              |
| 43. | "                                       | "                                                             | sketch of wheat pickles damaged by do.                                                                        |
| 44. | "                                       | "                                                             | specimens of rye damaged by do.                                                                               |
| 45. | "                                       | "                                                             | <i>oryzæ</i> , very injurious to all kinds of grain, but more especially to rice, magnified sketch of beetle. |
| 46. | "                                       | "                                                             | specimens of do.                                                                                              |
| 47. | "                                       | "                                                             | magnified sketch of pickles of rice attacked and damaged by do.                                               |
| 48. | "                                       | "                                                             | specimens of rice damaged by do.                                                                              |

CASE CXXX.

COLEOPTERA—*continued*.

CURCULIONIDÆ—*continued*.

Exotic Species, injurious to Cycads. Introduced into hot-houses, &c. from Natal.

- |     |                                 |                                                                                                                              |
|-----|---------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| 1.  | <i>Phaecorynus funerarius</i> , | injurious to stems of species of <i>Encephalartos</i> , South Africa, specimens of larvæ in phial.                           |
| 2.  | "                               | specimen of larva.                                                                                                           |
| 3.  | "                               | magnified sketch of <i>Encephalartos</i> , <i>sp.</i>                                                                        |
| 4.  | "                               | specimens of scales of <i>Encephalartos</i> , with larvæ feeding on them.                                                    |
| 5.  | "                               | do., do., with larvæ in stems of do.                                                                                         |
| 6.  | "                               | specimens of the beetle.                                                                                                     |
| 7.  | "                               | magnified sketch of do.                                                                                                      |
| 8.  | "                               | specimens of scales of <i>Encephalartos</i> , <i>sp.</i> , eaten away internally by larvæ of <i>Phaecorynus funerarius</i> . |
| 9.  | "                               | do., bored by do.                                                                                                            |
| 10. | "                               | do., do.                                                                                                                     |
| 11. | "                               | scale of do., showing beetle ready to come out.                                                                              |
| 12. | "                               | scale of do., injured by do.                                                                                                 |
| 13. | "                               | sketch of another species of <i>Encephalartos</i> , <i>sp.</i> , Natal.                                                      |

- NO.  
 14. *Tranes roeii*, lives on the stems and scales of species of *Zamia* in Australia, specimens of insect.  
 15. „ „ magnified sketch of do.  
 16. „ „ sketch of *Zamia mexicana*, Tropical South America.  
 17. „ *internatus*, sketch of *Macrozamia spiralis*, introduced from New Holland.  
 18. „ „ scale of do., showing course of larva of the beetle.  
 19. „ „ magnified sketch of larva of do.  
 20. „ „ specimens of perfect insect.  
 21. „ „ magnified sketch of do.  
 22. „ „ scale of *Macrozamia spiralis* opened, showing beetle ready to come out.  
 23. „ „ scales of do. bored by do.  
 24. „ „ transverse section of stem of do., showing ravages of this beetle.

## CASE CXXXI.

COLEOPTERA—*continued*.

## SCOLYTIDÆ (Bark-borers)—HYLESINIDÆ.

(In progress.)

## CASE CXXXII.

COLEOPTERA—*continued*.SCOLYTIDÆ (Bark-borers)—*continued*.

- NO.  
 1. *Scolytus destructor*, injurious to elm trees, specimen of larva.  
 2. „ „ sketch of larva, magnified.  
 3. „ „ specimens of perfect insect.  
 4. „ „ sketch of perfect insect.  
 5. „ „ specimen of underside of bark of elm tree showing the main or mothers' gallery with the boring of young larvæ extending out on each side.  
 6. „ „ underside of bark of elm tree, showing miscellaneous borings by *Scolytus destructor*.  
 7. „ „ specimen showing Dr. E. Roberts's method of dealing with *Scolytus*, and other similar wood-destroying insects. He cuts a large groove out of the outer bark of the tree, until the under bark or liber is laid bare, and the channels of the insects exposed, and then applies a dressing of coal tar or similar material. The objection to it (besides its impracti-

cability, except on the smallest scale), is that the insects often go below and through the liber, and that if it is removed a scar is made, which will ultimately produce decay. Specimen exhibited by Dr. Roberts in the Great Exhibition in 1862, entitled "Ravages of *Scolytus destructor*, the galleries eaten in the wood of the stem." Presented to the Department by Dr. Roberts after close of Exhibition. This illustration shows that they go below the liber, at which Dr. Roberts' treatment stops.

8. *Scolytus destructor*, another specimen shown by Dr. Roberts in the Exhibition of 1862 of supposed recovery from the ravages of *Scolytus destructor*. He states that the galleries are filled up with a new growth of wood. This seems doubtful. They look rather as if effaced by weather.
9.    "        "        another specimen exhibited by Dr. Roberts in 1862, showing distinctly the fresh growth of timber round the stem after treatment two years previously. Accompanying indications of future decay, however, will be seen all along the line of treatment.
10.   "        "        another example.
11.   "        "        M. Courval's system of dealing with *Scolytus*, which consists in cutting off the injured parts and dressing the surface with coal tar. Specimen of a section of an oak stem (30 years old) which was shown by him in the Great Exhibition of 1862, as proving the merits of his method. It bore the following statement: "An injured branch was cut off close to the stem, and the scar has been completely covered over by the annual layers of new wood without leaving any defect in the timber." This last statement is not strictly correct. Although decay has not yet set in, there is no union at the scar (in fact there can, in no case, be union of old wood once dis-severed), and in after years that part will decay and leave a spreading hole in the heart of the timber.
12.   "        "        another specimen.
13.   "        "        specimen showing the gradual growth of bark over the wounds caused by removing the portions attacked by insects by Dr. Roberts's method.
14.   "        *pygmæus* (*S. intricatus*, *Ratz*), specimen of perfect insect.
15.   "        "        sketch of do., magnified.

- NO.  
 16. *Scolytus pygmaeus*, portion of young elm tree destroyed by do.  
 17. " " portion of younger elm trees attacked by do., with bark pierced by the insects.  
 18. " " portion of young oak destroyed by do.  
 19. " " borings of do. in elm bark.  
 20. " *rugulosus*, specimens of perfect insect.  
 21. " " sketch of do., magnified.  
 22. " " oak bark bored by *Scolytus rugulosus*.  
 23. " *multistriatus*, specimens of perfect insect.  
 24. " " sketch of do., magnified.  
 25. " " outside of oak bark attacked by do.  
 26. " " inner side of oak bark attacked by do.

## CASE CXXXIII.

COLEOPTERA—*continued*.

## LONGICORNES (Timber-borers).

1. *Prionus coriarius*, larva feeds on timber of oak, beech, pine, &c., sketch of insect, female, magnified.
2. " " specimens of do., male.
3. " " specimens of do., female, Europe.
4. *Spondylis buprestoides*, larva feeds on timber of conifers, sketch of perfect insect magnified.
5. " " specimens of do., male.
6. " " specimens of do., female.
7. *Ergates faber*, larva feeds on timber of spruce and silver fir, South Europe, sketch of insect, female, magnified.
8. " " specimens of insect, male.
9. " " " " female.
10. *Ægosoma scabricorne*, larva feeds on timber of lime and poplar, slightly magnified sketch of insect.
11. " " specimens of perfect insect, male.
12. " " " " female.
13. *Hammaticherus heros*, larva feeds on sound oak timber, Continent, magnified sketch of egg of do.
14. " " specimen of do.
15. " " magnified sketch of larva.
16. " " specimens of larva of do., found feeding on fir root at Enfield, introduced.
17. " " droppings of larva of do.
18. " " gnawings of oak wood by larva of do.\*
19. " " sketch of pupa of do., magnified.
20. " " sketch of insect, male, "

- no.  
 21. *IHAMMATICHERUS heros*, specimens of insect, male.  
 22.     "     "     "     "     "     female.  
 23.     "     *cerdo*, France, sketch of insect, male, magnified.  
 24.     "     "     specimens of insect, male.  
 25.     "     "     "     "     "     female.  
 26.     "     "     portion of oak bored by do., with the beetles still in the holes, cut down at Potsdam in 1867. The flat holes are used by bats for their winter retreats.  
 27.     "     "     piece of walnut tree imported from Italy to Enfield factory to make musket stocks, bored by larva of do.  
 28.     "     "     portion of the root of a fir tree gnawed by the larva of do., no doubt introduced in wood used in Enfield factory. Found near Enfield.

## CASE CXXXIV.

COLEOPTERA—*continued.*LONGICORNES—*continued.* CLYTIDÆ, &c.

(In progress.)

## CASE CXXXV.

COLEOPTERA—*continued.*LONGICORNES—*continued.* SAPERDIDÆ, &c.

(In progress.)

## CASE CXXXVI.

COLEOPTERA—*continued.*

## PHYTOPHAGA.

(In progress.)

## CASE CXXXVII.

COLEOPTERA—*continued.*PHYTOPHAGA—*continued.* CHRYSOMELIDÆ.

## The Colorado Potato Beetle.

1. *Chrysomela (Doryphora) decemlineata*, sketch of *Solanum rostratum*, from Colorado, the natural food plant of the Potato beetle.

|     |    |                                      |                                                                                                                   |
|-----|----|--------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| no  | 2. | Chrysomela (Doryphora) decemlineata, | specimen of Solanum rostratum.                                                                                    |
| 3-  | "  | "                                    | " sketch of Potato leaves, showing where the eggs of the Potato beetle are fixed on the under side of the leaves. |
| 3A. | "  | "                                    | " specimens of the eggs on the leaves.                                                                            |
| 4-  | "  | "                                    | " sketch of Potato leaves attacked by larvæ of the Potato beetle.                                                 |
| 5-  | "  | "                                    | " magnified sketch of larva.                                                                                      |
| 6.  | "  | "                                    | " specimens of Potato beetle.                                                                                     |
| 7-  | "  | "                                    | " magnified sketch of pupa of do.                                                                                 |
| 8.  | "  | "                                    | " specimens of do.                                                                                                |
| 9-  | "  | "                                    | " magnified sketch of beetle, seen sideways.                                                                      |
| 10. | "  | "                                    | " specimens of do.                                                                                                |
| 11. | "  | "                                    | " magnified sketch of beetle, seen from above.                                                                    |
| 12. | "  | "                                    | " specimens of do.                                                                                                |
| 13. | "  | "                                    | undecemlineata, Mexican form of Potato beetle, magnified sketch of do., seen from above.                          |
| 14. | "  | "                                    | " specimens of do.                                                                                                |
| 15- | "  | "                                    | juncta, the False Potato beetle, from the Confederate States, magnified sketch of the larva of do.                |
| 16. | "  | "                                    | " specimen of do.                                                                                                 |
| 17- | "  | "                                    | " magnified sketch of beetle, seen from above.                                                                    |
| 18. | "  | "                                    | " specimens of do.                                                                                                |
| 19. | "  | "                                    | " magnified sketch of do., seen sideways.                                                                         |
| 20. | "  | "                                    | " specimens of do.                                                                                                |

## CASE CXXXVIII.

COLEOPTERA—*continued*.

## COCCINELLIDÆ.

(In course of arrangement.)

## CASE CXXXIX.

## MISCELLANEOUS INSECTS (injurious to Drugs, &amp;c.)

Anobium paniceum, one of the most destructive insects to all grains or roots containing any farinaceous matter, specimens of larva and magnified sketch.

- Anobium paniceum*, specimens of perfect insect and magnified sketch.
- “ “ cocoons of do., composed of fragment of carraway seeds.
- “ “ carraway seeds injured by do.
- “ “ cummin seeds, injured by do.
- “ “ alkanet root used for dyeing, injured by do.
- “ “ *Arnica montana* (mountain tobacco), a narcotico-acrid drug, from Switzerland, injured by do.
- “ “ fresh root of aconite, *Aconitum napellus*, sketch.
- “ “ dried roots of aconite (an acrid drug), injured by do.
- “ “ root of rhubarb injured by do.
- “ “ angelica root injured by do.
- “ “ root of sea holly, or eringo (*Eryngium maritimum*), injured by do.
- “ “ root of Calamus (a kind of palm which produces a fruit yielding the d' jur nang, or dragon's blood), injured by do.
- “ “ Zedoary (roots of *Curcuma zedoaria*), allied to ginger, injured by do.
- “ “ ginger (*Zingiber officinale*), injured by do.
- “ “ Ginseng (*Panax ginseng*), a root with stimulating and tonic properties, highly prized by the Chinese, injured by do.
- “ “ turmeric (*Curcuma longa*), injured by do.
- “ “ roots of marshmallows, useful as a mucilaginous demulcent, injured by do.
- “ “ root of *Polygonum bistorta*, a useful astringent, injured by do.
- “ “ salep, a nutritive substance derived from the roots of *Orchis mascula*, etc., injured by do.
- “ “ ergot of rye, injured by *Tinea granella* (the granary or wolf moth) and by do.
- Tinea granella*, granary moth or wolf moth, found devouring ergot of rye, specimens and magnified sketch.
- Tribolium ferrugineum*, found devouring *Calumba* root (root of *Tateorhize* from coast of Africa), a valuable tonic, narcotic and bitter, specimen and magnified sketch.
- Lyctus canaliculatus*, found devouring *Calumba* root, specimen and magnified sketch.
- Antribus*, *sp.*, found devouring *Calumba* root, specimen and magnified sketch.
- Bostrichus coronatus* *n. sp.*, the larva devours *Calumba* root, West Africa, magnified sketch.
- “ “ found in burrows in the *Calumba* root, West Africa, specimen and magnified sketch.



## CASE CXL.

ASH DISEASE, called Snail Bite in South of Scotland. Supposed by some to be produced by an insect, which seems doubtful.

- NO.  
1. Specimen of branchlet, longitudinally divided, showing the first commencement of the disease.
2. " farther advanced, branch beginning to swell.
3. Sketch of tree badly diseased.
- 4-10. Ten various specimens of branches, with the disease characteristically affected.
11. Sketch of a branch so diseased.

## CASE CXLI.

MISCELLANEOUS EXOTIC GALLS, from Sikkim.

1. Galls on species of oak.
2. Section of gall.
3. Specimens of do.
4. Sketch of larvæ contained in the cells of the gall.
5. Galls on mid ribs of leaves of (?), containing specimens of the maker (*Cicadellina* ?) and an Ichneumonidous insect.
6. " *Lagerstræmia*, *sp.*, apparently made by rolling up half the leaf, afterwards thickening and consolidating it.
7. " root of (?).
8. " (?).

## CASE CXLII.

MISCELLANEOUS EXOTIC GALLS—*continued.*

1. Hard globular gall on leaf of (?).
2. Flask-shaped galls on stalk of (?). Hymenopterous insects, and Lepidopterous insects found inside. Himalaya.
3. Flasked-shaped galls growing around stem of (?).
4. Galls on twigs of (?).
5. Fine fleecy gall on twigs of (?).
6. Galls on leaves of (?), with sketches of thrips found inside.
7. Galls on leaves of (?), produced by insects which appear, from their remains, to be some species of *Psylla*, as shown in magnified sketch.

## CASE CXLIII.

MISCELLANEOUS EXOTIC GALLS—*continued.*

- NO.  
 1-3. Laurel leaves attacked by flask-shaped galls, with specimens and sketches of insects found in them—one, the larva of a cucujoid beetle, and the other an undeveloped Hymenopterous insect.  
 4-6. Pubescent, hard, woody galls on leaf of (?), with insect and magnified sketches of insect found in them.  
 7-9. Smaller flask-shaped galls attacking laurel leaves (perhaps a variety of the above), with magnified sketches of their inhabitants—one a species of coccus, and the other a Hymenopterous larva.  
 10-11. Galls on leaf of (?) (Hydrangea species), with magnified sketch of inhabitant.

## CASE CXLIV.

MISCELLANEOUS EXOTIC GALLS—*continued.*

- 1-2. Galls on leaf of Magnolia, with magnified sketch of inhabitant, a species of coccus (nov. gen.) (?).  
 3-4. „ shoots of Magnolia, *sp.*, with magnified sketch of inhabitant, new genus of coccus.  
 5-7. „ leaves of (?), with insect and magnified sketch of do. (a species of *Psyllus*) found in them.  
 8. „ young shoots of (?).

## CASE CXLV.

MISCELLANEOUS EXOTIC GALLS—*continued.*

- 1-3. Galls on leaves of *Diospyros sp.* (one of the Ebonies) with remains of insects found in them, insects and magnified sketch.  
 4-6. „ the leaf stem of *Butea frondosa*, the leguminous tree from which one of the varieties of gum lac is obtained, a sketch of Curculionidous beetle (*Cryptorhynchus sp.*) found in it, insect and magnified sketch.  
 7-8. „ leaves of a species of *Gnetum*, sketch.  
 9. Scale insect (coccus) *sp.*, on (?), magnified sketch.

## CASE CXLVI.

MISCELLANEOUS EXOTIC GALLS—*continued.*

NO.

- 1-3. Gall on (?) (?), consisting of a greatly swollen irregularly lobed mass, developed out of a leaf. The insect remains in it; it seems to be a species of *Chermes*; a fly is also among the debris, insect and magnified sketch.
- 4-6. Leathery galls on twigs of species of *Hydrangea*, with sketch of gall and insect found within (an accidental wayfarer).
- 7-9. Galls on leaves of (?), very similar to beech leaf gall (*Cecidomyia fagi*), with insect and magnified sketch.

The galls in this and the other cases of Exotic Galls are not exhibited so much as illustrations of the economic mischief done by the particular galls, as of the general nature of galls and of the different forms they assume.

## CASE CXLVII.

## MISCELLANEOUS NORTH AMERICAN GALLS.

1. Round soft galls on the leaves of *Artemisia tridentata*, the species of sage that chiefly clothes the alkaline desert plains of Western North America from Utah.
2. Sketch of branch of do. with leaf-gall.
3. Sketch of parasitic *Ichneumonidous* insect obtained from leaf gall on do.
4. Specimen of do.
5. Sketch of gall on buds of do.
6. Bud galls on do.
7. Woolly gall on do.
8. Sketch of do.
9. Twig of *Artemisia Douglasiana*, with pith eaten away by an insect, Utah.
10. Sketch of twig of do., the white sage, the only kind of sage eatable by cattle.
11. Vesicular leaf gall on *Artemisia spinescens*, Utah.
12. Sketch of gall on twig of do.
13. Gall in leaf bud of white sage, *Artemisia Douglasiana*, Utah.
14. Sketch of do.
15. Sketch of gall on mid-rib of *Prunus sp.*, Utah.
16. Specimen of do.
17. Specimen of larva of small moth from gall of *Prunus*, Utah.
18. Sketch of do., magnified.
19. Galls on willows, Utah, very frequent.
20. Sketch of do.
21. Sketch of defacement of leaves of willow produced by *Aphis*, Utah.
22. Specimens of do.

## CASE OXLVIII.

## INSECTICIDES (substances used to destroy Insects).

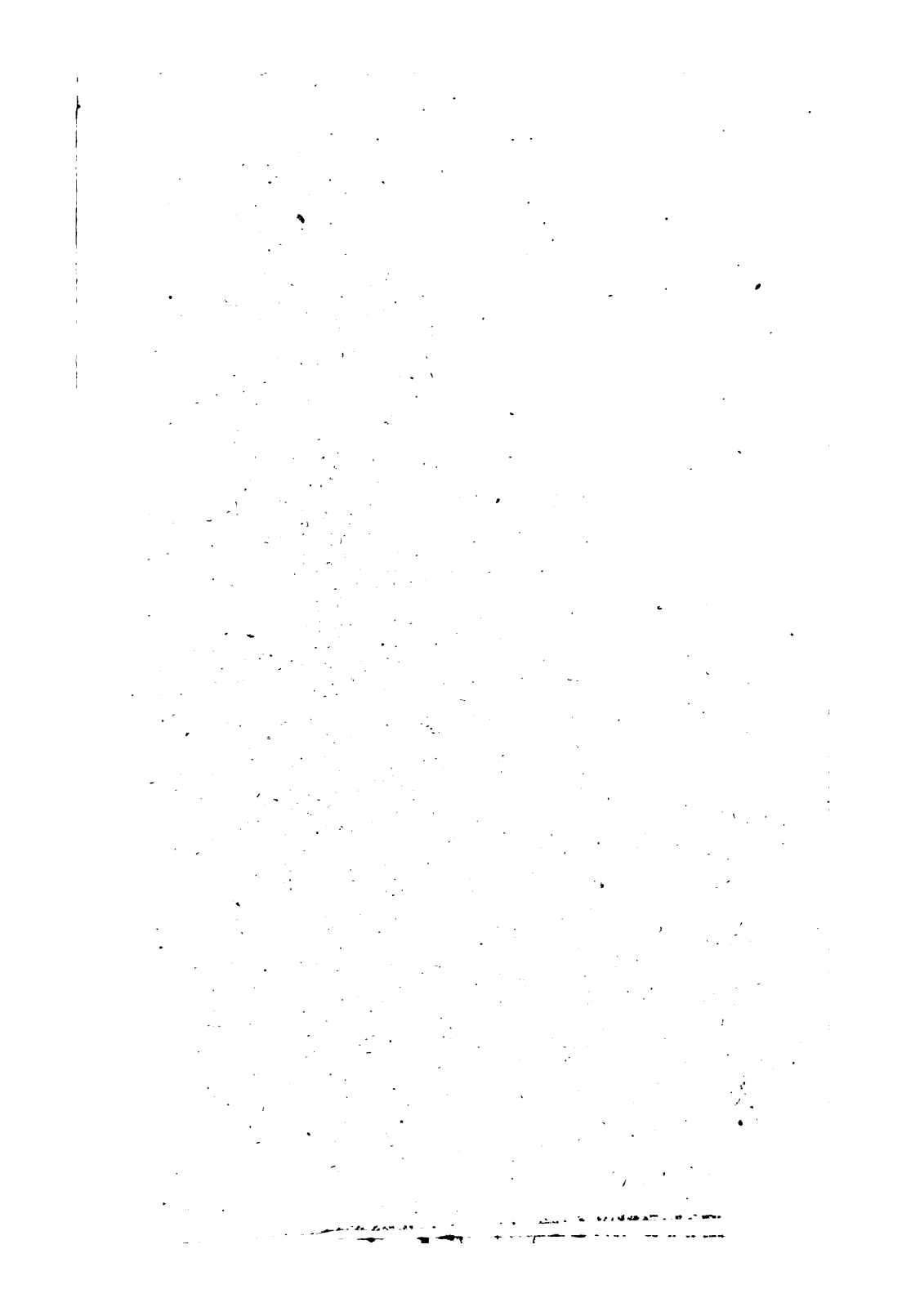
- NO.
1. Specimen of *Pyrethrum roseum*. The pollen of this plant, and of other species of *Pyrethrum*, has a stupefying effect upon insects, whence it has come to be used as insect powder.
  2. Sketch of some cultivated varieties of *Pyrethrum roseum*.
  3. Specimen of *Pyrethrum alpinum*, a plant possessed of the same protective properties against insects as the other species of *Pyrethrum*.
  4. Specimen of *Pyrethrum cinerariæfolium*, a powerful species, much used for insect powder; from Dalmatia.
  5. Specimen of *Anthemis nobilis*, sweet camomile, like all the *Anthemidæ* possessed of similar properties to *Pyrethrum*, but in a feeble degree.
  6. Genuine insect powder from *Pyrethrum cinerariæfolium*, presented by Prof. Koch, of Berlin, who first made known its properties.
  7. Genuine insect powder, from *Pyrethrum roseum* and *P. carneum*, from Prof. Koch.
  8. Insect powder, from shops in London.
  9. Magnified pollen grains of *Pyrethrum*.
  10. Magnified pollen grains of *Anthemis*.
  11. Adulterated insect powder, seen under the microscope, showing that there is little or none of the pollen grains present, in which alone the virtue of the insect powder resides.
  12. Preparations of sulphur. Roll of sulphur, used for smoking plant-houses.
  13. " " Powdered sulphur for dusting plants; valuable remedy.
  14. " " Gishurst compound, a sulphur soap used, diluted, to water insect-infected plants.
  15. Preparations of hellebore. Powdered hellebore, used for powdering gooseberry bushes, as a remedy against gooseberry caterpillars.
  16. Camphor, used for preserving clothes, &c., from moths—without much effect.
  17. Preparations of arsenic. Paris green, used against the Colorado beetle.
  18. Preparations of mercury. Bicarbonate of mercury, used for killing parasites on men in hospitals and poor-houses, &c.
  19. " " Corrosive sublimate, used to preserve skins, &c., from insects.
  20. Preparations of carbolic acid. Carbolic acid in powder, used to kill insects in cases, &c.
  21. " " Soap containing carbolic acid, used for washing dogs.

No.

22. Preparations of phosphorus. James's phosphoric paste, used for killing insects in dwelling houses.
23. Preparation of ? , Rollinson's cantharikopho, used for killing cockroaches, beetles, &c.
24. Naphthaline in crystals, most effectual in destroying mites.

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